12. SITE 95

The Shipboard Scientific Party[1]

SITE DATA

Occupied: March 27-30, 1970.

Position: 24°09.00'N; 86°23.85'W.

Water Depth: 1633 meters.

Total Depth: 463 meters.

Holes Drilled: One.

Cores Taken: Twenty-two.

BACKGROUND AND OBJECTIVES

A brief description of the Yucatan shelf has been presented by Logan et al. (1969) and is as follows:

"The Yucatan shelf is the submerged part of a low limestone plateau which also includes the Peninsula de Yucatan. The plateau slopes gently from south to north and is bounded on the west, north, and east by precipitous continental slopes which plunge from the submerged plateau margin to the abyssal depths of the Gulf of Mexico and the Caribbean Sea. The plateau margin normally is at depths of 550-900 ft, but in places it is shallower; minimum depths of 240 ft are recorded on the western margin, southwest of the Triangulos reefs. Much of the northern part of the plateau has been the site of limestone deposition dating from Tertiary time. During the Late Quaternary, sedimentary conditions on the Yucatan shelf have been broadly analogous to those of the Tertiary and early Pleistocene, i.e., carbonate sediments have been deposited on the older limestone in much of the 22,000-sq mi shelf area. The hinterland adjacent to the shelf is a region of karst topography devoid of surface drainage systems; thus, river-borne detrital materials are not found in the sediments on the northern shelf.".

The origin of the Campeche escarpment has been attributed to several causes. Some suggest that the scarp represents a fault scarp, others suggest that its origin is a function of upbuilding and outbuilding likened, in some cases, to that of delta building. Still others suggest that the scarp represents the detrital accumulation seaward of a barrier or reef complex.

There is no direct evidence to support the theory that the scarp is the result of faulting. The idea that a major barrier reef separated the evaporites and carbonates of both the Florida and Yucatan banks from the Gulf of Mexico has long been held by many petroleum geologists operating in the Gulf.

No direct evidence for such a reef complex bordering the edge of the Yucatan shelf was found until very recently. Bryant et al. (1969) reported the recovery of Lower Albian shallow-water, algal and pelletal limestone along the eastern edge of the Yucatan shelf at a depth of approximately 1500 fathoms. This led them to suggest that a Lower Cretaceous reef complex bordered the east, north, and west portions of the scarp. The extension of this complex to the western sectors of the bank was inferred from arcer profiles.

Ewing and Ewing (1966) were the first to infer that a drowned barrier reef underlies the edge of the escarpment. Their evidence was also taken from seismic reflection profiles. Uchupi and Emery (1968) also suggested the existence of such a barrier.

Although Bryant et al. (1969) found direct evidence for the existence of Albian age shallow-water limestone on the Campeche Scarp, the exact depth of the barrier was unknown, but seismic profiles of the eastern bank indicated that the barrier was located at a depth of about 1300 meters.

Sites 86 and 94 were drilled on the northwesterly facing upper scarp and show essentially similar structures and histories. Site 95 was planned to determine if a similar structure and history existed on the northeasterly facing Campeche Scarp face and to see if the Cretaceous could be further detailed, since that aim had been thwarted by equipment problems in Site 94. A further objective was to obtain a detailed stratigraphy from the Paleocene to the Cretaceous to determine if any evidence could be obtained about the transition from shallow-water environments in the Early Cretaceous to bathyal-abyssal environment in the Late Cretaceous and Tertiary.

A coring inventory is given in Table 1. *Glomar Challenger* recurred nearly seventy per cent of this site.

NATURE OF SEDIMENTS

General Description

Site 95, the third in a series of sites along the Yucatan outer platform, encountered a pelagic sequence of Tertiary and Late Cretaceous ages overlying Lower Cretaceous shallow-water limestone and dolomite. As in Sites 94 and 86, a number of unconformities or very thin stratigraphic intervals are present within Site 95. When these unconformities are taken into account, a comparison of the three sites on the basis of physical character appears valid. In terms of sediment thickness, the most notable unconformity appears to be Upper Pleistocene sediments overlying Upper(?) Oligocene.

[1] J. Lamar Worzel, Marine Biomedical Institute, University of Texas, Galveston; William Bryant, Texas A&M University (co-chief scientists); Arthur O. Beall, Jr., Continental Oil Company (lead sedimentologist); Kendell Dickinson, United States Geological Survey; Robert Laury, Southern Methodist University; Lee Anderson Smith, ESSO Production Research (lead paleontologist); Blake McNeely, Shell Oil Company; Helen P. Foreman, Oberlin College; Roy Capo, Lamont-Doherty Geological Observatory.

TABLE 1
Core Inventory – Site 95

Core	No. Sections	Date	Time	Cored[a] Interval (m)	Cored (m)	Recovered (m)	Subbottom Penetration (m) Top	Bottom	Lithology	Age
1	6	3/27	0800	1633-1640	7.0	7.0	0	7.0	Foram nanno ooze	Late Pleistocene
2	6	3/27	1130	1715-1724	9.0	9.0	82.0	91.0	Foram nanno ooze	Early Oligocene
3	6	3/27	1315	1754-1763	9.0	9.0	121.0	130.0	Foram nanno ooze	Early Oligocene
4	4	3/27	1500	1792-1801	9.0	4.5	159.0	168.0	Foram nanno ooze	Early Oligocene
5	4	3/27	1645	1831-1840	9.0	6.0	198.0	207.0	Foram nanno chalk	Early Oligocene
6	6	3/27	1945	1869-1878	9.0	9.0	236.0	245.0	Foram nanno chalk	Late Eocene
7	6	3/27	2145	1907-1916	9.0	9.0	274.0	283.0	Foram nanno chalk	Middle Eocene
8	6	3/28	0000	1965-1974	9.0	9.0	332.0	341.0	Foram nanno chalk	Middle Eocene
9	1	3/28	0220	1977-1983	6.0	0.2	344.0	350.0	Chert & chalk	Early to Middle Eocene
10	4	3/28	0630	1996-2004	8.0	6.0	363.0	371.0	Foram nanno chalk	Late Paleocene
11	4	3/28	1330	2010-2019	9.0	5.0	377.0	386.0	Chalk & chert	Early Paleocene
12	4	3/28	1630	2019-2028	9.0	5.4	386.0	395.0	Foram nanno chalk	Early Paleocene
13	4	3/28	1930	2028-2033	5.0	5.6	395.0	400.0	Nanno chalk	Late Cretaceous
14	1	3/28	2215	2033-2041	8.0	1.4	400.0	408.0	Foram nanno chalk	Late Cretaceous
15	6	3/29	0000	2041-2050	9.0	9.0	408.0	417.0	Foram nanno chalk	Late Cretaceous
16	6	3/29	0140	2050-2059	9.0	9.0	417.0	426.0	Nanno chalk	Late Cretaceous
17	6	3/29	0350	2059-2068	9.0	9.0	426.0	435.0	Nanno chalk	Late Cretaceous
18	–	3/29	0615	2068-2071	3.0	0.0[b]	435.0	438.0	Foram nanno chalk	Late Cretaceous
19	–	3/29	0930	2071-2074	3.0	0.0[b]	438.0	441.0	Dolomite	Early Cretaceous
20	–	3/29	1300	2074-2081	7.0	0.0[b]	441.0	448.0	Dolomite	Early Cretaceous
21	1	3/29	1545	2081-2090	9.0	0.5	448.0	457.0	Dolomite	Early Cretaceous
22	–	3/30	0000	2090-2096	6.0	3.0	457.0	463.0	Dolomite	Early Cretaceous
Total					172	117.6		463.0		
% Cut					37.1%					
% Recovered						68.2%				

[a]Drill pipe measurement from derrick floor.
[b]Recovery in core catcher only.

Soft nannofossil chalk was first encountered at a depth of approximately 200 meters, after encountering nannofossil ooze in the previous core; the younger, slightly clayey ooze of post-Oligocene age is apparently less conducive to the formation of chalk. It appears that very small percentages of clay greatly influence formation of consolidated chalk, probably by retardation of carbonate cementation or packing. Penetrometer readings of approximately 10 occur at 200 meters below the sea floor at all three sites, tending to substantiate the recognition of chalk formation.

The first appearance of soft chalk seems to correspond reasonably well with the reflective zone starting at about 220 meters depth. The base of this reflective zone at 400 meters may correspond with the base of the chert-bearing, hard chalk of Paleocene age at that same depth. Compositionally, the Upper Cretaceous chalks are essentially identical to Tertiary chalks but contain a high percentage of calcite grains of unknown origin. This carbonate has an interesting spindle-shaped morphology which suggests an organic origin. The top of the Lower Cretaceous dolomite section appears to agree reasonably well with the top of the next reflective zone at 430 meters.

Characteristics of such pelagic sediments as those represented by Tertiary and Upper Cretaceous beds have been discussed in previous chapters and will not be repeated here. The presence of annealed cross fractures and microfaults in Cores 11 and 12 (and possibly in 10) suggest post-depositional readjustment of associated beds. Mechanical disturbance in overlying beds during drilling undoubtedly has destroyed any evidence of similar deformation in the younger beds. It is possible that the fractures represent unloading of overlying sediment, such as the missing sediment represented by the Oligocene-Pleistocene unconformity. Continued cursory inspection of the profiler records from this region suggests that post-depositional slumping, sometimes probably of massive scale, has produced many of the large sediment "cut-outs" or unconformities previously discussed; an example is in Site 94. It seems obvious that drastic thickness changes and abrupt discontinuities are well demonstrated by the profiler records. The most likely interpretation, at this point, appears to be that of gravity slumping down the continental slope and contiguous Campeche Scarp. Sites 85 and 93 demonstrated the presence of slump blocks along the lower scarp face and in associated canyons or reentrants. The large mass of Plio-Pleistocene, clayey, nannofossil ooze and associated graded, carbonate laminites described from Site 3 of Leg 1 undoubtedly represent the abyssal plain equivalent of such massive slumps from the continental slope of the Yucatan platform. Further geophysical analysis is apparently needed in this area to resolve many of the problems discussed here.

The presence of chert is accompanied by a general increase in abundance of siliceous microorganisms (sponge spicules, radiolarians, and lesser diatoms and silicoflagellates). As at Site 94, radiolarians and/or sponge spicules are common from Lower Eocene through Upper Miocene sediments and largely absent in Paleocene sediments, although chert was noted locally in Core 11 at Site 95 and also in Paleocene beds (Core 34) at Site 94. Volcanic glass, which occurs relatively commonly with the siliceous organisms (as noted in Site 86), is also less common below Lower Eocene beds.

Ash or ashy sediments are, however, present in Lower Paleocene cores. A sample from Core 12 contains abundant glass and common zeolites in a matrix of nannofossils and clay minerals. The glass has a prevalent corroded appearance and is probably in the process of altering to montmorillonite. A nearly completely altered ash is present in Core 16 of Late Cretaceous (Santonian) age.

The dolomitic rocks of probable Early Cretaceous age are quite comparable to those recovered at the two previous sites. Core 20 contains a few examples of skeletal calcisiltite similar to that recovered at Site 95 which appears to represent shallow shelf sedimentation. Core 21 contains a very porous dolomite with a mottled to brecciated(?) fabric which could be interpreted as solution breccia. Dolomitization is charaterized by selective leaching of fossil debris. Grains are commonly miliolids, ostracods, orbitolinid forams, pelecypods, gastropods, and pellets/lithoclasts. Cores 19 and 22 are essentially identical to lithologies recovered at previous holes and suggest a supratidal environment of deposition. The presence of dark black material in these cores, originally identified as "asphaltite," was found to be low in organic carbon. Such zones are now interpreted as iron-rich, residual soil horizons, possibly a reflection of considerable surface solution of carbonate.

Sedimentological Interpretation

As in Sites 86 and 94, the shallow water carbonates of probable Early Cretaceous age are capped by relatively deep-water pelagites in Site 95, ranging in age from Late Cretaceous to Pleistocene. No indications of significant bathymetric variations were found in any of the latter sediments, which supports the interpretation of subsidence of the Yucatan platform during post-Albian, pre-Santonian time. The various unconformities represented in the rock record since that time are probably of complex origin, some representing major regional disconformities whereas others are totally local. The authors favor gravity slumping as a probable interpretation for most of the missing section.

It is interesting to note that in the shallow-water Lower Cretaceous limestones and dolomites from the three holes, no evidence of reef-building organisms has been noted. On the basis of sedimentological parameters, carbonate petrography, and paleontological interpretations, the consensus appears to be shallow-shelf to supratidal environments for the upper few tens of meters of Lower Cretaceous platform carbonates penetrated at Sites 86, 94, and 95. Pusey (personal communication) states that these miliolid-rich mudstones and wackestones are identical with restricted, shallow-shelf deposits known from other portions of the Gulf of Mexico. The only major exception appears to be that echinoderm fragments are extremely rare at the drilled sites; this implies even greater restriction and isolation from normal marine circulation. One is left to conclude that reef and associated facies lie either seaward of these sites or are poorly developed. The presence of rudistid reef facies appears assured by the presence of rudistid debris seaward of the Campeche Scarp (Site 85). It seems especially evident that following deposition of these shallow-water carbonates, the ensuing transgressive phase of sedimentation was not accompanied by reef development at the aforementioned sites or such sediments were subsequently removed by erosion. Updip control, preferably near the present continental shelf edge, appears necessary before detailed interpretations can be offered.

Physical Measurements

As mentioned previously, natural gamma-ray data appear to correlate well with gross composition. Gamma-ray count values in the high carbonate, low clay content, Oligocene-Eocene section of Site 95 are characteristically low and correspond with the statigraphically equivalent section of Sites 94 and 86 (within limits). Interestingly enough, one can interpret the steadily decreasing average values from west (Site 86) to east (Site 95) as representing decreasing terrigenous clay content—a relationship one might expect from regional stratigraphic considerations (a western source of terrigenous clay). X-ray data appear to substantiate such a relationship (see X-ray data, this report). The Pleistocene is comparable at all three sites.

The natural gamma-ray count reversal noted in the Paleocene at Sites 86 and 94 does not appear to be present in Paleocene sediments at Site 95, although count values are slightly higher than in the overlying Eocene. Natural gamma-ray counts in the underlying Upper Cretaceous chalk are on the same order as those from the Pleistocene, supporting the slightly clayey to clayey visual description as well as the presence of thin bentonite beds and bands. Core 16 contains bentonite with a gamma-ray count approaching 4,500 per 75 seconds.

Fair recovery of dolomite in Core 21 helped characterize the Lower Cretaceous carbonates. Surprisingly, a count averaging approximately 3,500 was obtained, suggesting a history of potash(?) enrichment, possibly related to fluid alteration during dolomitization. Although it was expected that the dolomite would have a higher count than the over-lying chalks, it was not expected that the count would be so high. Unfortunately, a count could not be obtained on the dark black, "residual soil" horizons.

Penetrometer measurements again reflect consolidation with depth. As mentioned previously, the top of the soft chalk horizon appears to coincide with a penetrometer reading of approximately 10. The so-called hard chalks have penetrometer readings of zero. The cores below Core 12 were not tested because of their severely disturbed state. Subjectively, these chalks appear soft, while the dolomites at the bottom of the hole are naturally quite hard.

BIOSTRATIGRAPHY

As interpreted from the fossil plankton (foraminifers and calcareous nannofossils), the biostratigraphy of Site 95 is summarized in Figure 1. This is the first site of the leg at which deep-water Upper Cretaceous sediments (early Santonian to early Campanian) were penetrated, supporting the interpretation of the presence of a major disconformity (probably early Cenomanian to late Maestrichtian) in sediments of the central and western Campeche Bank (Sites 86 and 94). As in Sites 86 and 94, most of the Cenozoic is represented by pelagic (bathyal) sediments.

Sample 1 (10-95-1, CC):

Globorotalia tumida, G. truncatulinoides, G. menardii (sinistral), *Globigerina inflata, Globigerinoides ruber* (pink), *Gephyrocapsa oceanica, G. aperta, G. kamptneri, Pseudoemiliania* sp., and *Reticulofenestra* sp.

Age: Late Pleistocene, (probable latest Wisconsinan): *Globorotalia Truncatulinoides* Zone; *Pulleniatina finalis* sub-Zone.

Environment: Bathyal.

Remarks: Reworked Late Miocene to Early Pleistocene calcareous nannofossils also were observed. These include *Discoaster brouweri, D. asymmetricus, D. quinqueramus, Sphenolithus abies,* and *Cyclococcolithus leptoporus macintyrei.*

Sample 2 (10-95-2, CC):

Globorotalia opima opima, G. nana, G. anqulisuturalis, G. pseudokugleri, G. mayeri, Globigerina ciperoensis, G. binaiensis, Cassigerinella chipolensis, Discoaster trinidadensis, D. adamanteus, Reticulofenestra scissura, Helicopontosphaera parallela, H. truncata, H. seminulum ssp., *Sphenolithus ciperoensis,* and radiolarians of the *Dorcadoapyris ateuchus* Zone.

Age: Early Oligocene (P-21), late *Globorotalia opima opima* Zone.

Environment: Bathyal.

Sample 3 (10-95-3, CC):

Globoratalia opima opima, G. nana, Globigerina angulisuturalis, G. anguliofficinalis, G. ciperoensis, G. rohri, Cassigerinella chipolensis, Globoquadrina venezuelana, Helicopontosphaera compacta, H. truncata, H. seminulum ssp., *Reticulofenestra scissura, Sphenolithus predistentus, S. pseudoradians, Discoaster deflandrei, D. saundersi, D. trinidadensis,* and radiolarians of the *Dorcadospyris ateuchus* zone.

Age: Early Oligocene (P. 21), *Globorotalia opima opima* Zone.

Environment: Bathyal.

Sample 4 (10-95-4, CC):

Globorotalia opima opima, G. nana, G. angulisuturalis, Globigerina ciperoensis, G. rohri, G. sp. aff. *G. ampliapertura, Discoaster trinidadensis, D. adamanteus, Helicopontosphaera truncata, H. compacta, Sphenolithus distentus, S. predistentus, S. ciperoensis, Leptodiscus larvalis,* and radiolarians of the *Dorcadospyris ateuchus* Zone

Age: Early Oligocene (early P. 21), early *Globorotalia opima opima* Zone.

Environment: Bathyal.

Remarks: The sample also contains volcanic glass shards.

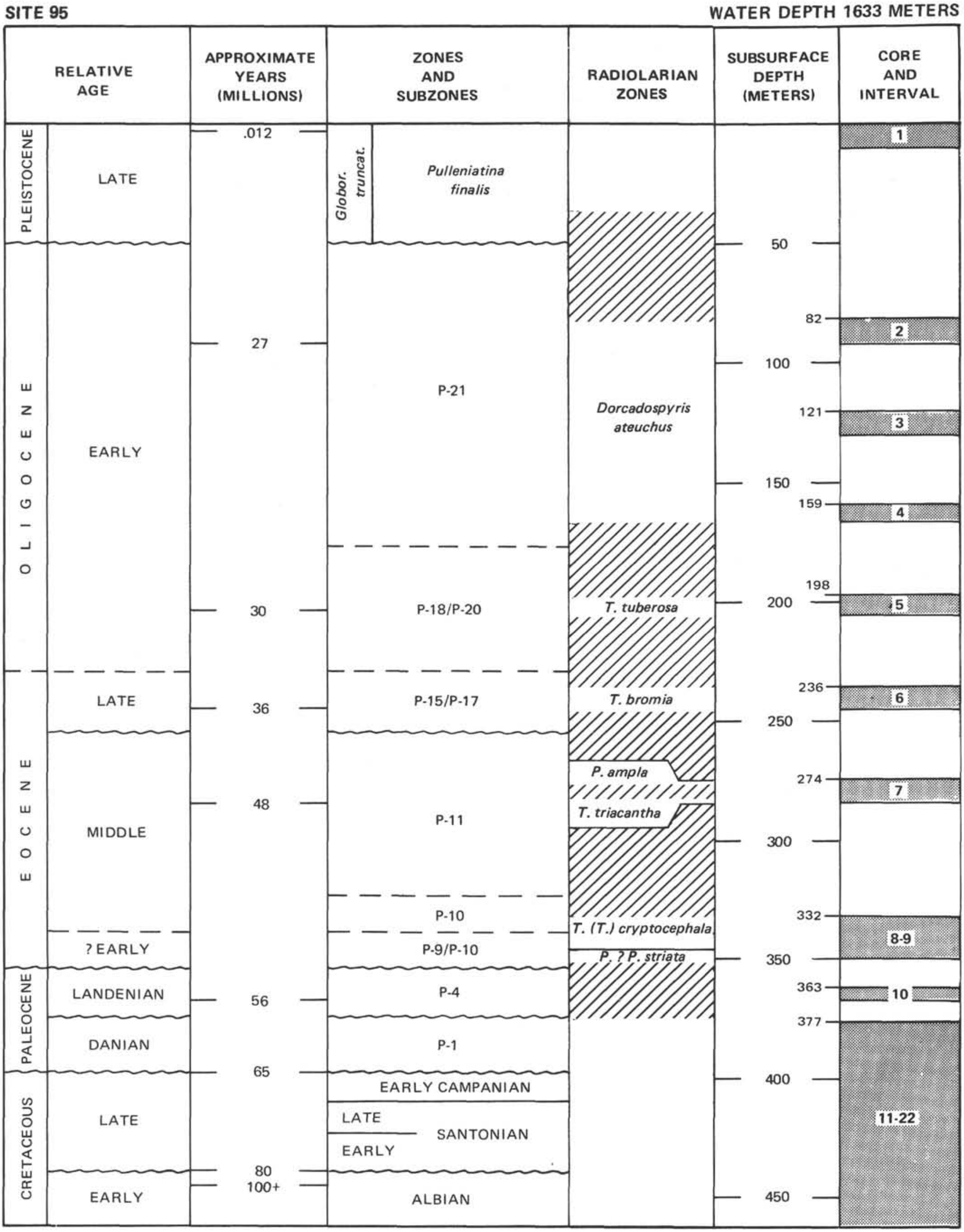

Figure 1. *Biostratigraphic summary of Site 95.*

Sample 5 (10-95-5, CC):
Cassigerinella chipolensis, Hastigerina micra, Globorotalia nana, G. increbescens, Globigerina sp. cf. *G. ampliapertura, G. ouachitaensis, G.* sp. cf. *G. parva, Globoquadrina venezuelana, Catapsydrax dissimilis, Discoaster adamanteus, D. trinidadensis, Helicopontosphaera compacta, H. truncata, H.* sp. cf. *H. reticulata, Reticulofenestra scissura, R. umbilica, Sphenolithus predistentus,* Cf. *Staurolithites minutus,* and radiolarians of the *Theocyrtis tuberosa* Zone.
Age: Early Oligocene (P. 18/P. 19), the *Cassigerinella chipolensis-Hastigerina micra* Zone.
Environment: Bathyal.
Remarks: The sample also contains volcanic glass shards. Among the Radiolaria, the reworked Middle Eocene species include *Thyrsocyrtis hirsuta hirsuta.*

Sample 6 (10-95-6, CC):
Globorotalia cerroazulensis, G. centralis, G. nana, G. increbescens, Globigerina rohri, Globigerapsis sp. cf. *G. index, G. semiinvoluta, Hastigerina micra, Catapsydrax dissimilis, Discoaster barbadiensis, D. saipanensis, G. tani tani, Syracosphaera labrosa, Bramletteius serraculoides, Blackites spinosus, Pyrocyclus hermosus, Micrantholithus inaequalis, Pemma papillatum,* and radiolarians of the *Thyrsocyrtis bromia* Zone.
Age: Late Eocene (probable P. 15), *Globigerapsis semiinvoluta* Zone.
Environment: Bathyal.
Remarks: The sample also contains volcanic glass shards.

Sample 7 (10-95-7, CC:
Globorotalia aragonensis, G. spinulosa, G. bulbrooki, G. spinuloinflata, G. renzi, Globigerapsis kugleri, G. index, Globigerina boweri, Hantkenina mexicana, Truncorotaloides topilensis, Discoaster barbadiensis, Chiasmolithus gigas, Cruciplacolithus staurion, Bramletteius serraculoides, Triquetrorhabdulus inversus, Micrantolithus proceras, Spenolithus radians, S. sp. cf. *S. furcatolithoides,* and radiolarians of the *Thyrsocyrtis triacantha* Zone.
Age: early Middle Eocene (P. 11), *Globigerapsis kugleri* Zone.
Environment: Bathyal.
Remarks: The sample contains also volcanic glass shards.

Sample 8 (10-95-8 CC):
Globorotalia aragonensis, G. spinuloinflata, G. bullbrooki, G. renzi, Globigerina boweri, Globigerapsis sp. cf. *G. kugleri, Hastigerina micra, Chiasmolithus grandis, C. solitus, Triquetrorhabdulus inversus, Heliorthus robustus, Cruciplacolithus delus, Discoaster mirus, D. hilli, Craspedolithus bramlettei,* and radiolarians of the *Theocotyle (Theocotyle) cryptocephala cryptocephala* Zone.
Age: Early Middle Eocene (P. 11), the *Globigerapsis kugleri* Zone.
Environment: Bathyal.

Sample 9 (10-95-9, CC):
Globorotalia aragonensis, G. sp. cf. *G. pseudomayeri, G. aspensis, G. renzi, G. broedermanni, Globigerina boweri, Globigerapsis* sp. cf. *G. kugleri, Chiasmolithus grandis, C. consuetus, Cruciplacolithus delus, Cyclococcolithus gammation,* Cf. *Fasciculithus* sp., *Spenolithus radians,* Cf. *Marthasterites? cuspis,* and radiolarians of the *Buryella clinata* Zone.
Age: Early Middle to late Early Eocene (P. 10), *Hantkenina aragonensis* Zone.
Environment: Bathyal.

Sample 10 (10-95-10, CC):
Globorotalia pseudomenardii, G. velascoensis, G. aequa, G. acuta, G. sp. cf. *G. soldadoensis, G.* sp. cf. *G. occlusa, G. mckannai, Discoaster lenticularis, Ericsonia ambis, Toweius* sp., *Fasciculithus* sp., *Heliorthus distentus,* and *Chiasmolithus californious.*
Age: Late Paleocene (P. 4), *Globorotalia pseudomenardii* Zone.
Enviroment: Bathyal.
Remarks: Some down-hole contamination from the overlying Eocene section was noted among the radiolarians and calcareous nannofossils.

Sample 11 (10-95-11, CC):
Globorotalia trinidadensis, G. pseudobulloides, G. compressa, Globigerina triloculinoides, Globoconusa daubjergensis, Cruciplacolithus tenuis, Zygodiscus sigmoides, and *Chiasmolithus danicus.*
Age: Early Paleocene (P. 1), (Danian).
Enviroment: Bathyal.

Sample 12 (10-95-12, CC):
Globorotalia trinidadensis, G. pseudobulloides, G. compressa, Globigerina triloculinoides, Globoconusa daubjergensis, Zygodiscus sigmoides, and *Cruciplacolithus tenuis.*
Age: Early Paleocene (P. 1), (Danian).
Environment: Bathyal.
Remarks: The sample contains a few reworked Late Cretaceous foraminifers, calcareous nannofossils, and radiolarians.

Sample 13 (10-95-13, CC):
Marginotruncana carinata, M. angusticarinata, Globotruncana stuartiformis, G. lapparenti, G. elevata, G. fornicata, G. bulloides, Planoglobulina glabrata, Stensioina americana, Heterostomella americana, Watznaueria barnesae, Cretarhabdus conicus, Cyclolithus? gronosus, Eiffelithus turriseiffeli, Prediscosphaera cretacea, Zygodiscus pseudanthroporus, Lucianorhabdus cayeuxi, Microrohabdulus belgicus, and radiolarians *Artostrobium tina, A. urna, Pseudoaulophaeus gallowayi, P. parqueraensis, Dictyomitra torquata,* and *Theocampe sallillum.*
Age: Late Cretaceous (Early Campanian).
Environment: Bathal.

Sample 14 (10-95-14, CC):
Marginotruncana carinata, M. angusticarinata, M. coronata, Globotruncana stuartiformis, G. elevata, G. fornicata, G. lapparenti, G. bulloides, "Gublerina" decoratissima, Planogumbelina glabrata, and *Praeglobotruncana citae.*

Age: Late Cretaceous (early Campanian).
Environment: Bathyal.

Sample 15 (10-95-15, CC):
Marginotruncana carinata, M. coronata, M. angusticarinata, Globotruncana lapparenti, G. fornicata, "Gublerina" sp. cf. *G. decoratissima, Whiteinella* spp., *Globigerinelloides* spp., *Watznaueria barnesae, Eiffelithus augustus, E. turriseiffeli, Presidcosphaera cretacea, Cretarhabdus conicus, Microrhabdulus belgicus, Lucianorhabdus cayeuxi,* and *Tetralithus pyramidus.*
Age: Late Cretaceous (probable late Santonian).
Environment: Bathyal.

Sample 16 (10-95-16, CC):
Sample 17 (10-95-17, CC):
Sample 18 (10-95-18, CC)
Marginotruncana concavata, M. coronata, M. carinata, M. angusticarinata, M. renzi, M. pseudolinneiana, Globotruncana fornicata, Whiteinella sp., *Globigerinelloides* spp., *Eiffelithus angustus, Zygodiscus deflandrei, Z. manifestus, Cyclolithus gronosus,* Cf. *Rucinolithus hayi,* and *Marthasterites furcatolithus simplex.*
Age: Late Cretaceous (early Santonian).
Environment: Bathyal.

Sample 19 (10-95-19, CC):
Sample 20 (10-95-20, CC):
Sample 21 (10-95-21, CC):
Sample 22 (10-95-22, CC)
Miliolid foraminifers, ostracods, probable algae, and mollusks.
Age: probable Early Cretaceous (probable late Albian; possibly as young as Coniacian).
Environments: Shallow carbonate shelf to carbonate intertidal and supratidal.
Remarks: Core 10-95-22 contained mostly Pleistocene-Recent down-hole contamination of pteropod-foraminiferal ooze.

DISCUSSION AND INTERPRETATION

Glomar Challenger drilled Site 95 (Figure 2) March 27-30, 1970. Twenty-two cores were recovered over a depth interval of 463 meters and ranged in age from Early Cretaceous to Pleistocene[2] (Table 1). No Miocene or Pliocene sediments were recovered. In general, the Lower Cretaceous consists of shallow-water limestones and dolomites; while from Late Cretaceous on, the sediments were deposited in a bathyal environment and ranged from calcareous oozes to chalks. Some cherts are present in the Upper Eocene and Paleocene sediments.

The Early Cretaceous is represented by well-lithified limestones and dolomites. Their shallow-water origins are interpreted from the porous nature of some of the dolomites, the brecciated fabric similar to solution breccia, the

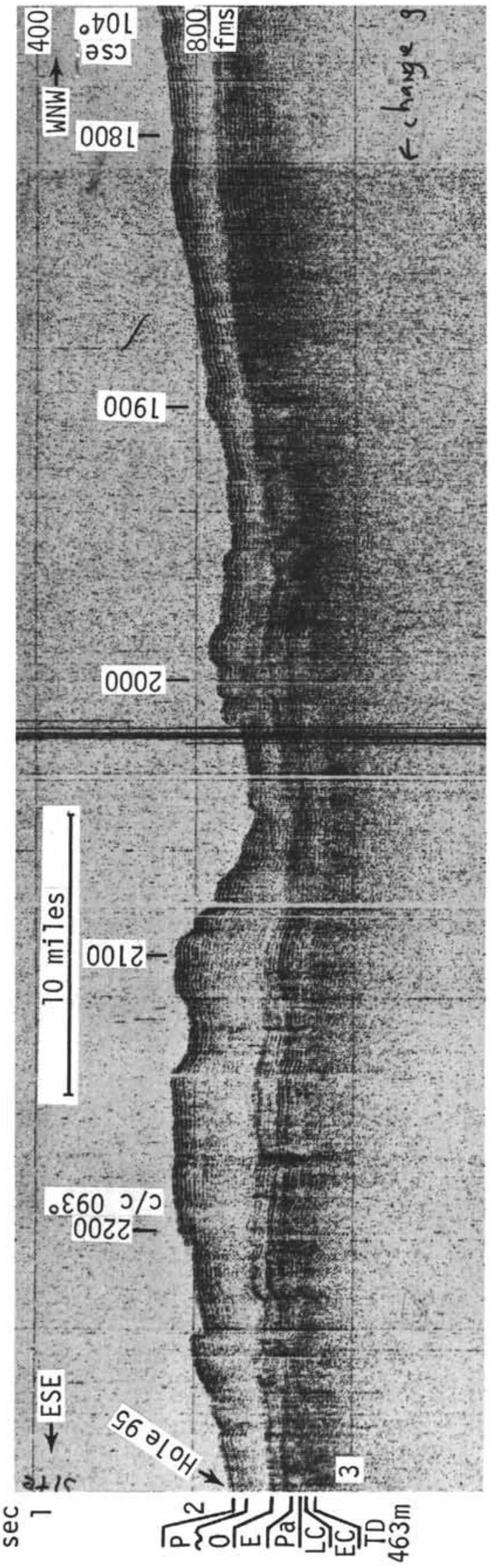

Figure 2. *Profile record, Site 95.*

[2] (Late Wisconsin) (Figure 2).

miliolid foraminifers, the ostracods, the probable algae, the mollusks, and the algal mats. These have the aspect of backreef deposits. No reef deposits were encountered. Either bank-edge reefs must have occurred farther seaward and been removed in the interim by faulting, slumping, or erosion, or no reef formed along the edge of this bank. In view of the other known Cretaceous reefs, the latter seems highly improbable. The view favored is that slumping must have removed the reef section of the bank and distributed the material in the deep basin because of the breccias encountered in Site 86 and the coarse turbidite layers encountered in the holes drilled in the deep basin.

In the mid-Cretaceous period, the Campeche Bank must have subsided relative to sea level so that the region of Site 95 entered its present environment by early Late Cretaceous, and has maintained it since then. Such adjustment could not be the result of isostasy, so another cause must be sought. Slumping of large blocks on the seaward front would be attractive; however, it seems unlikely slumps of almost identical vertical movement could have affected such widely separated regions as Sites 85, 93, and 94.

Dark black layers in the Lower Cretaceous are iron-rich residual soil which indicates that at some stage, considerable surface solution of carbonate occurred. The deepest reflection observed on the profiler records falls at 450 meters, which correlates well with the top of the Lower Cretaceous.

From Upper Cretaceous on, the region had a bathyal environment essentially the same as today's. Chalks predominate in the section from the top of the Eocene (230 meters) through the Lower Cretaceous. The first prominent subbottom reflection on the profiler record correlates well with the top of the chalk. The chalks become noticeably harder and more indurated in Core 9 near the beginning of the Lower Eocene at a depth of 350 meters. There is a slightly stronger reflection on the profiler record at this depth, but it falls in a region of numerous reflectors, so it is not very prominent. The Lower Paleocene chalks are fractured with many of the fractures annealed. It is suggested that this may be due to unloading by slumping of overlying sections. Missing sections of the Plio-Pleistocene, Oligocene, and Eocene suggest that such slumping must have occurred. This is further supported by profiler records on the track between Sites 94 and 95 where reflectors can be seen to end abruptly within the section. Sometimes similar reflectors appear at a different depth, and in other cases no similar reflectors appear. Sometimes, similar reflectors appear again abruptly, farther along the track. All of this suggests slumping has played an important role in the development of this scarp. The irregularity of the surface traversed indicates that the slumping has continued at least until the end of the Pleistocene.

Cherts were encountered in Eocene and Paleocene sediments. These were not well developed. There is, thus, a "chert gradient" in Site 86 no chert, in Site 94 some incipient cherts, and in Site 95 better developed and thicker cherts. An inverse gradient of clastics is observed for these same holes, as indicated by the decreasing gamma-ray counts, for instance. Perhaps the incidence of clastics inhibits the formation of chert. Further study of these cores should give strong clues about the formation of cherts.

Volcanic ashes are present in the Oligocene and Paleocene sediments, but are more rarely found here than in Site 94 and rarer there than in Site 86, suggesting that the source of the volcanics was to the west.

Because of the necessity of burying the bottom drill assembly, only one core shallower than 80 meters was recovered. This was at the mud line, is of late Wisconsin age, and contains reworked Upper Miocene and Lower Pleistocene materials.

The average sedimentation rate in Site 95 is 0.45 $cm/10^3y$. This is probably grossly underestimated since significant portions of the section appear to be missing. In the Oligocene, the average rate of sedimentation was 1.5 $cm/10^3y$, in the Eocene 0.52 $cm/10^3y$, and in the Paleocene 0.50 $cm/10^3y$. The Eocene rate must be a low estimate as some of the section is known to be missing.

To summarize then, Site 95 attests to the shallow-water nature of the late Early Cretaceous. Relative sinking to bathyal depths was accompanied by a discontinuity in the section. From the Late Cretaceous, a stable bathyal environment is indicated. Discontinuities in the section at the end of the Cretaceous, the middle and end of the Paleocene, in the Middle Eocene, and at the end of the Oligocene, accompanied by continued bathyal sedimentation, and the discontinuities in the reflection horizons on the approach to the drill site all suggest that major slumping occurred throughout the Cenozoic along the Campeche slope.

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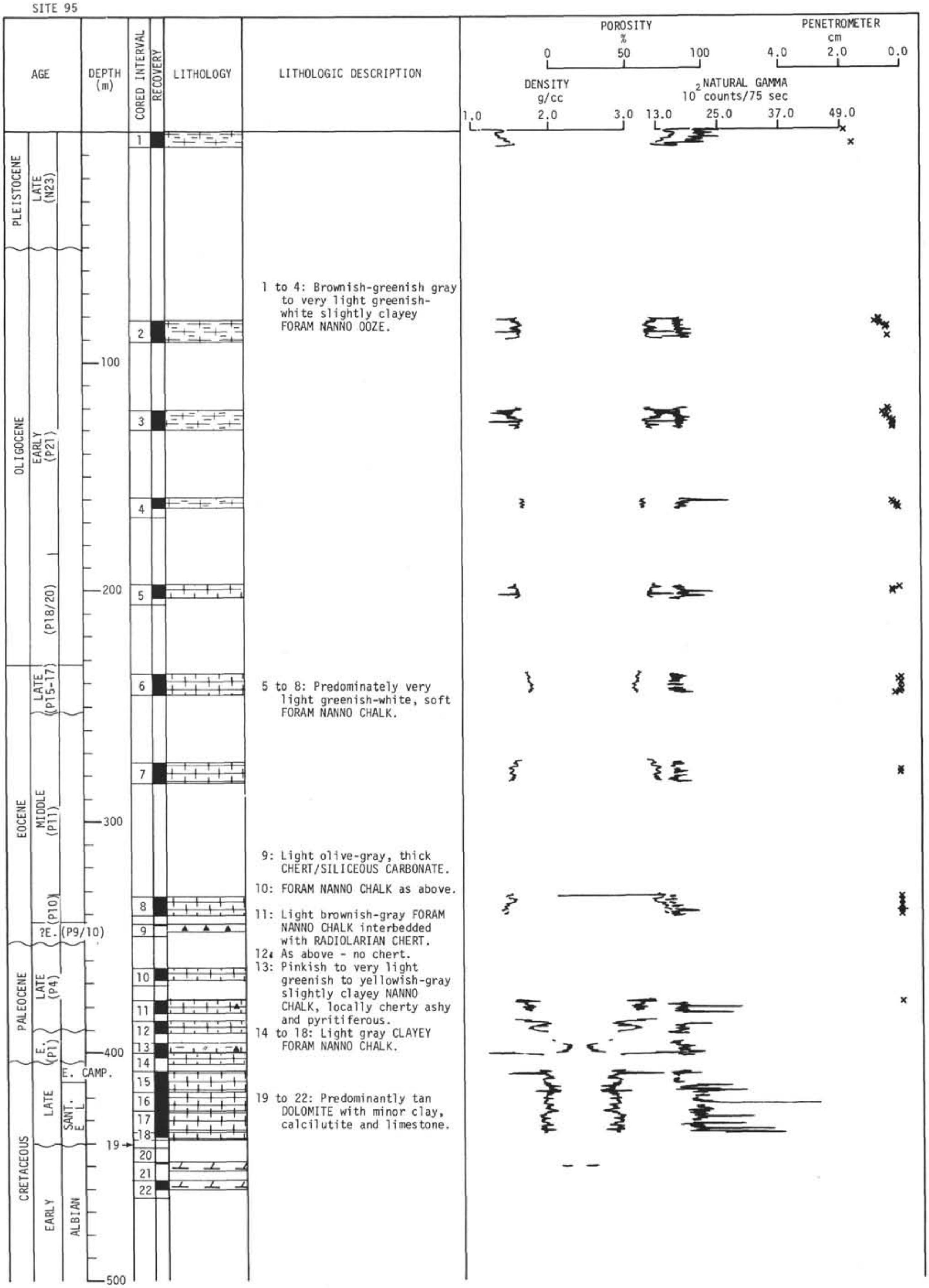

SITE 95
AGE
DEPTH (m)
CORED INTERVAL
RECOVERY
LITHOLOGY
LITHOLOGIC DESCRIPTION
POROSITY %
0 50 100
PENETROMETER cm
4.0 2.0 0.0
DENSITY g/cc
1.0 2.0 3.0
NATURAL GAMMA 10^2 counts/75 sec
13.0 25.0 37.0 49.0
PLEISTOCENE
LATE (N23)
OLIGOCENE
EARLY (P21)
(P18/20)
LATE (P15-17)
EOCENE
MIDDLE (P11)
(P10)
?E. (P9/10)
PALEOCENE
LATE (P4)
E. (P1)
E. CAMP.
CRETACEOUS
LATE
SANT. L E
EARLY
ALBIAN
100
200
300
400
19
500
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 20 21 22
1 to 4: Brownish-greenish gray to very light greenish-white slightly clayey FORAM NANNO OOZE.
5 to 8: Predominately very light greenish-white, soft FORAM NANNO CHALK.
9: Light olive-gray, thick CHERT/SILICEOUS CARBONATE.
10: FORAM NANNO CHALK as above.
11: Light brownish-gray FORAM NANNO CHALK interbedded with RADIOLARIAN CHERT.
12: As above - no chert.
13: Pinkish to very light greenish to yellowish-gray slightly clayey NANNO CHALK, locally cherty ashy and pyritiferous.
14 to 18: Light gray CLAYEY FORAM NANNO CHALK.
19 to 22: Predominantly tan DOLOMITE with minor clay, calcilutite and limestone.

Site 95 Hole Core 1 Cored Interval: 0-7 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE PLEISTOCENE	*Globorotalia truncatulinoides (Pulleniatina finalis* Subzone)	1	0.5 1.0	VOID P P			10YR7/4 Pteropod-Foram ooze.			
							FORAM NANNO OOZE Brownish-greenish gray (mixed 5GY8/1, 5YR5/1; 5YR6/1 with subsidiary mottles of 5YR4/1); slightly clayey; strongly burrowed.	19.9	25.3	54.8
		2								
		3		UNOPENED			Sections 2,3 and 4 not opened - too disturbed.			
		4								
		5					NANNO-RICH FORAM OOZE Very light greenish-white and very light brownish-gray (mixed 5GY9/1 and 5YR7/1).			
				VOID						
							As in Section 1, 5G9/1 and 5YR7/1-5/1.			
				VOID						
		Core Catcher								

Site 95 Hole Core 2 Cored Interval: 82-91 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY OLIGOCENE	P21	1	0.5 1.0	VOID			VOID			
							FORAM NANNO OOZE Greenish-white (5G9/1-N9 transitional mottled with 5YR7/1, 5Y7/1, N5); strongly burrowed.			
							VOID			
		2						13.0	45.6	41.4
		3					VOID			
							VOID			
		4		UNOPENED			Sections 4 and 5 not opened - too disturbed.			
		5								
		6					As above. Commonly vaguely laminated with pronounced fecal stain (N6) throughout.	16.8	47.9	35.3
							VOID			
		Core Catcher								

Site 95 Hole Core 3 Cored Interval: 121-130 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY OLIGOCENE	P21	1	0.5, 1.0				Pyrite concretion. FORAM NANNO OOZE Very light greenish-white (N9-5GY9/1 transitional mottled with N4-5 faecal specks/burrow-fill 5Y9/1,5G7/1,5GY9/1); strongly burrowed; very rarely vaguely laminated.			
		2				—	Blank spaces in lithology column represent voids.	8.5	42.5	49.0
		3				—		8.9	41.3	49.7
		4				—	As above with rare vague laminae.	2.0	85.7	12.3
		5				—		7.1	43.2	49.7
		6				—		11.4	44.3	44.3
		Core Catcher								

Site 95 Hole Core 4 Cored Interval: 159-168 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY OLIGOCENE	P21	1	0.5, 1.0				Section 1 not described. Very short. FORAM NANNO OOZE Very light greenish-white (N9-5G9/1 transitional with N6-N7 speckles throughout and some N6 and N3 mottles); strongly burrowed.			
		2				—		7.0	50.6	42.4
		3				—	Heavily mottled with N7.	10.3	47.7	42.0
		4					As above with rare vague laminae. —VOID			
		Core Catcher								

Site 95 Hole Core 5 Cored Interval: 198-207 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY OLIGOCENE	P18/P19	1	0.5, 1.0			—	First appearance of soft chalk.	12.9	53.6	33.5
							FORAM NANNO CHALK (soft) and OOZE (?) Very slightly greenish-white (N9); strongly burrowed. Chalk probably destroyed during coring.			
		2				—	VOID	6.0	60.3	38.6
		3				—	As above with slight increase of greenish hue - N9 dominant.	12.7	55.2	32.1
		4				—	As above with small pieces of soft chalk scattered throughout.	11.9	55.8	32.3
		Core Catcher								

Site 95 Hole Core 6 Cored Interval: 236-245 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE EOCENE	P15	1	0.5, 1.0				Disturbed throughout. FORAM NANNO CHALK (soft) Very light pinkish-white (N9-5YR9/1 transitional); strongly burrowed.			
		2				—		1.3	67.6	36.1
		3				—		3.4	66.6	30.1
		4				—	As above. Slightly more brownish hue. Still N9-5YR9/1.	12.0	50.7	39.3
		5				—		2.1	62.2	35.7
		6				—	As above. Transition to 5Y9/1-N9 transitional. Light yellowish-white.	1.7	60.6	37.7
		Core Catcher								

Site 95 Hole Core 7 Cored Interval: 274-283 m

Age: MIDDLE EOCENE — Zone: P11

Section	Lithologic Description	Sand	Silt	Clay
1	Strongly disturbed. FORAM NANNO CHALK (soft) Very light greenish-white (N9-5GY9/1 transitional); strongly burrowed (?).			
2	As above with sparse mottles of 5YR7/1-8/1.	15.1	55.8	29.1
3		17.2	52.0	30.8
4		19.9	56.5	23.6
5		24.7	52.7	22.6
6		17.7	52.4	29.9
Core Catcher				

Site 95 Hole Core 8 Cored Interval: 332-341 m

Age: MIDDLE EOCENE — Zone: P11

Section	Lithologic Description	Sand	Silt	Clay
1	Strongly disturbed. FORAM NANNO CHALK (soft) Very light greenish-brownish-white (5GY9/1-N9 transitional); strongly burrowed.			
2	As above with abundant soft to intermediate chalk fragments throughout.	15.8	52.3	32.0
3		12.8	58.0	29.1
4		18.7	54.9	26.5
5	As above. Transitional to 5Y9/1. Very light yellowish-white/gray.	19.3	57.5	23.1
6	Highly mottled with N7 and rare N3. As above. Rarely mottled with 5YR5/1,N8.	15.7	56.6	27.7
Core Catcher				

Site 95 Hole Core 9 Cored Interval: 344-350 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
MIDDLE to EARLY EOCENE	P10	Core Catcher					Core catcher: CHERT/SILICEOUS CARBONATE Light olive gray (5Y7/1-8/1); probably interbedded with chalk. Similar to chert of core 11.			

Site 95 Hole Core 10 Cored Interval: 363-371 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE PALEOCENE	P4	1	0.5 1.0				Note: Core 10 severely disturbed throughout. Not described in detail. FORAM NANNO CHALK (soft) Very light greenish-white (N9-5G9/1 transitional); strongly burrowed (?).			
		2								
		3								
		4								
		Core Catcher								

Site 95 Hole Core 11 Cored Interval: 377-386 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY PALEOCENE	P1	1	0.5 1.0	VOID			Interbedded FORAM NANNO CHALK (hard) and RADIOLARIAN CHERT. Former is light brownish-gray (5YR9/1-5Y9/1 transitional with slightly darker zones of N7, mottled with N7-N8 throughout); strongly burrowed; radiolarian (?). Latter is 5Y4/1,5Y6/1-8/1 and frequently mixed or mottled.			
		2					As above. Occasionally vaguely laminated.			
		3					Note: Intermediate angle, inclined annealed fractures and microfaults appear to represent joints.			
		4					As above.			
		Core Catcher								

Site 95 Hole Core 12 Cored Interval: 386-395 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY PALEOCENE	P1	1	0.5, 1.0				FORAM NANNO CHALK (hard) Pinkish-gray (5YR8/1 laminated with 5YR7/1, N6); strongly burrowed; occasionally vaguely laminated. Radiolarian?			
		2					Sections 2 and 3 not described in detail - as below.			
		3								
		4					As above, but only somewhat foraminiferal. 5YR7/1 mottled with 5YR8/1-9/1,N7. 5YR8/1 mottled with 5YR7/1 and 9/1.			
		Core Catcher								

Site 95 Hole Core 13 Cored Interval: 395-400 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Early Campanian)		1	0.5, 1.0	VOID			NANNO CHALK (hard) Pinkish-gray (5YR8/1 mottled with 5Y5/1, 5YR9/1); somewhat foraminiferal; strongly burrowed.			
		2					As above. Very light greenish-white (5G9/1-N9 mottled with 5YR7/1,5YR8/1-9/1 and 5G8/1). Soft and more foraminiferal than above. As above. Light yellowish-gray (5YR8/1-9/1 mixed); slightly clayey (?).			
		3					Ooze/chalk (5YR7/1 mottled with 5YR9/1,8/1 and 5G7/1). NANNO OOZE/Very soft CHALK Light pinkish-gray/white (5YR9/1); very slightly foraminiferal.			
		4					NANNO CHALK Light gray (N7 with N8,N6,N5); slightly ashy/clayey, pyritiferous; locally cherty, possibly radiolarian-bearing, slightly foraminiferal; severely burrow mottled.			
		Core Catcher								

Lithic change in Section 4 is possibly a Cretaceous-Tertiary contact zone.

Site 95 Hole Core 14 Cored Interval: 400-408 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Early Campanian)		1	0.5, 1.0	VOID			FORAM NANNO CHALK Slightly clayey; strongly burrow-mottled; alternating bands/zones of N7-N5-N6 with subsidiary N8.			
		Core Catcher								

Site 95 Hole Core 15 Cored Interval: 407-417 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Late Santonian)		1	0.5, 1.0				Note: Sections 1-5 not described in detail. Similar to Section 6. Section 1 contains distinctive burrows with concave-up laminated fill.			
		2					5G6/1 green bentonite laminae.			
		3					Sections 3 and 4 are lighter gray (N8) - less clay.			
		4								
		5					FORAM NANNO CHALK Light gray (N7-N8); slightly clayey to clayey; strongly burrowed and mottled; vaguely laminated.			
		6								
		Core Catcher								

Site 95 Hole Core 16 Cored Interval: 417-426 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Early Santonian)		1	0.5, 1.0				Note: Sections 1-5 not discribed in detail. Similar to Section 6. Bentonite, mottled, 5B5/1.			
		2					Section 2: clayey zone near top.			
		3								
		4					Section 4: slightly more argillaceous near base (ashy).			
		5					Ashy, clayey chalk and burrow-mixed ash and clay (5B6/1). NANNO CHALK Intercalated olive gray to light yellowish gray; clayey to slightly clayey; somewhat foraminiferal; strongly burrowed; occasionally vaguely laminated. 5Y8/1-7/1			
		6					5Y9/1 5Y6/1-5GY6/1 Section 6, 0-16 cm: slight H_2S/CH_3 odor? 5Y5/1 5Y7/1 5Y5/1			
		Core Catcher								

Site 95 Hole Core 17 Cored Interval: 426-435 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Early Santonian)		1	0.5, 1.0				Note: Sections 1-5 not described in detail - approximately as in Section 6.			
		2								
		3								
		4					CLAYEY NANNO CHALK Intercalated clayey and slightly clayey chalk. Gray to light yellowish gray to olive gray; strongly burrowed; occasionally to rarely vaguely laminated. Note thick bentonite bed.			
		5					N8 slightly clayey chalk. N7 clayey chalk. N7 with gray blue bentonite burrow-fill. Burrow mottled bentonite 5PB5/2 grayish-blue mottled with 5Y6/1. N8 slightly clayey chalk. 5Y5/1 clayey chalk. Transitional.			
		6					Slightly clayey. Light yellowish gray (5Y9/1-N8).			
		Core Catcher								

Site 95 Hole Core 18 Cored Interval: 435-438 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
LATE CRETACEOUS (Early Santonian)		Core Catcher					FORAM NANNO/CALCILUTITE CHALK (soft) Light gray (N7); slightly clayey; strongly burrow mottled (N8 and minor N5).			

Site 95 Hole Core 19 Cored Interval: 438-441 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY CRETACEOUS (Late Albian?)		Core Catcher					Core catcher only. Several lithologies: 1) DOLOMITE Tan (10YR 7/2-7/4); microcrystalline and sucrosic with occasional fracture-fill; minor porosity/permeability. Similar to dolomite samples of core 20. 2) CALCAREOUS CLAY and CLAYEY CARBONATE CALCILUTITE. Yellowish brown (10YR5/2); firm; micro-laminated to moderately laminated; odorous (HC); supratidal? Probably dolomitic. 3) CLAY Light bluish-gray (5B5/1); minor; unctuous; soft; pyritiferous; odorous (HC); bentonitic? 4) SOLID HYDROCARBON Broken bands/laminae of N3 dark gray/grayish black with a dull luster. (Probably an asphalt derivative). Calcareous and evidently interbedded with (2) above. HCl removes carbonate and leaves asphalt - heavy crude residue which fluoresces under U.V. light. Crude odor.			

Site 95 Hole Core 20 Cored Interval: 441-448 m

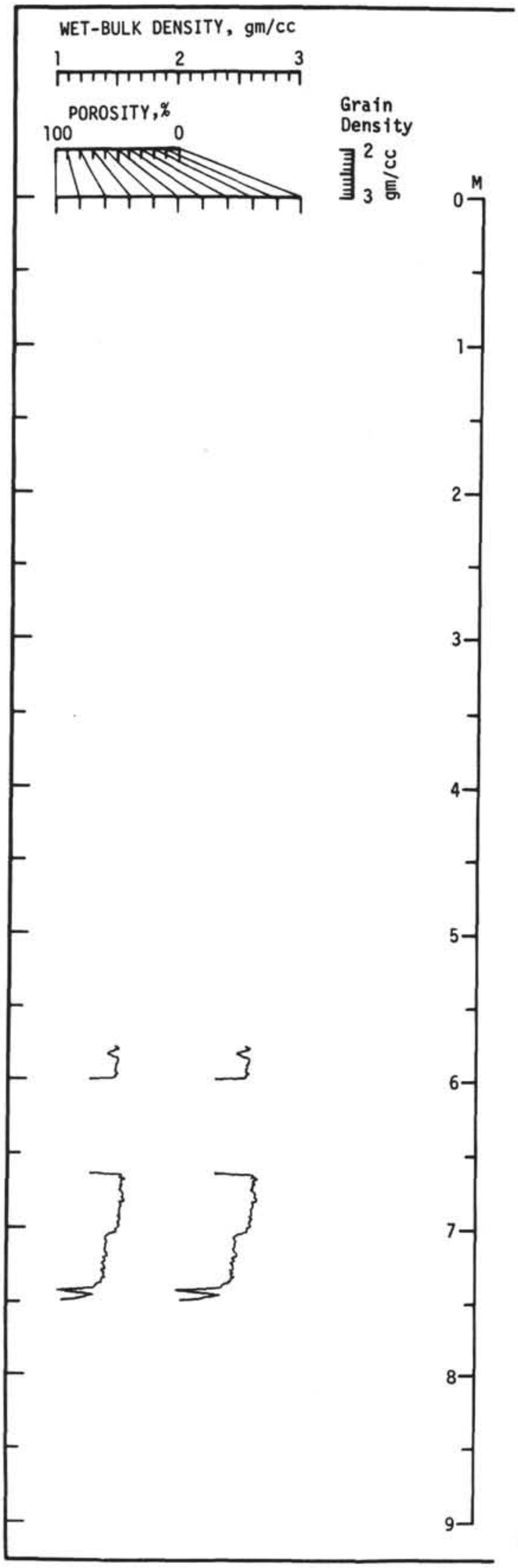
AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY CRETACEOUS (Late Albian?)		Core Catcher					Core catcher only. Two main lithologies: 1) DOLOMITE Yellow-brown (10YR7/2); very fine to microcrystalline; in part succrosic with low porosity/permeability. One sample of slightly darker brecciated dolomite with small vugs and mottled appearance (10YR4/2 and 7/2). Minor calcite infill. 2) LIMESTONE Yellowish-gray to gray (5Y8/1 mottled with N7); skeletal. a. abundant molluscan and foraminiferal debris set in matrix of lutite. No porosity. Some clear calcite infill. (Shelf?) b. Slightly more mottled with leached moldic porosity - moderate porosity/permeability. Some sparse infill. Transitional lithology between 1 and 2.			

Site 95 Hole Core 21 Cored Interval: 448-457 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY CRETACEOUS (Late Albian?)		1	0.5 1.0	VOID			(Solution breccia?) DOLOMITE 10YR5/2 clasts in 10YR5/2-6/2 matrix; 10YR7/2 with clasts of 6/2 at base of Section 1; porous and hard with brecciated fabric. Clasts more porous than matrix. Occasional vugs. At base, lighter colored dolomite shows smaller breccia; less porous and finer grained - declining porosity to base of core.			
		Core Catcher								

Site 95 Hole Core 22 Cored Interval: 457-463 m

AGE	ZONE	SECTION	METERS	LITHOLOGY	DEFORMATION	LITHO. SAMPLE	LITHOLOGIC DESCRIPTION	GRAIN SIZE WEIGHT % SAND	SILT	CLAY
EARLY CRETACEOUS (Late Aibian?)		Core Catcher					Core catcher only. 1) DOLOMITE a. Tan (10YR7/2 sometimes mottled with 5B5/1-6/1); very fine grained; minor moldic porosity/permeability. Somewhat sucrosic. to b. Yellowish-gray (5Y8/1 mottled with 5Y7/1 to 10YR7/2); burrowed (?); slightly argillaceous; very fine grained lutite. Minor porosity/permeability. 2) CALCILUTITE and CALCAREOUS SOLID HYDROCARBON. N3 interlaminated with 5Y8/1-9/1; asphaltive material as in core 19. Crude odor.			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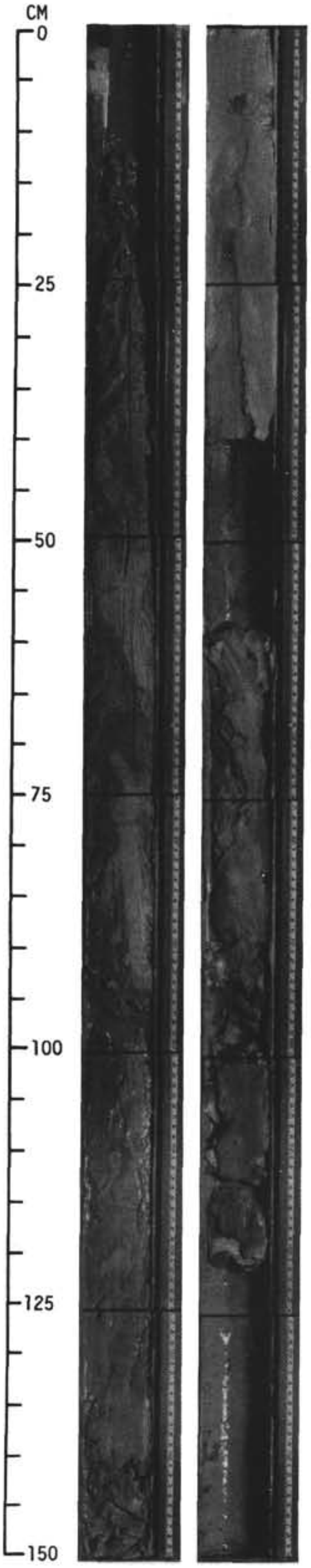
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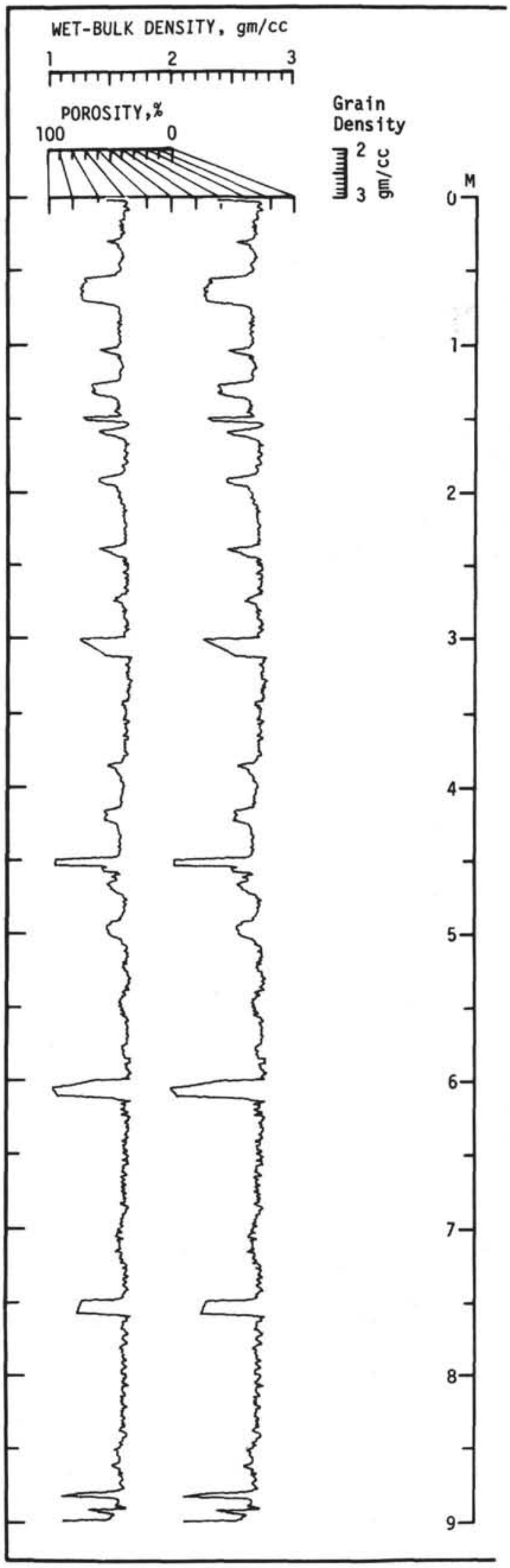

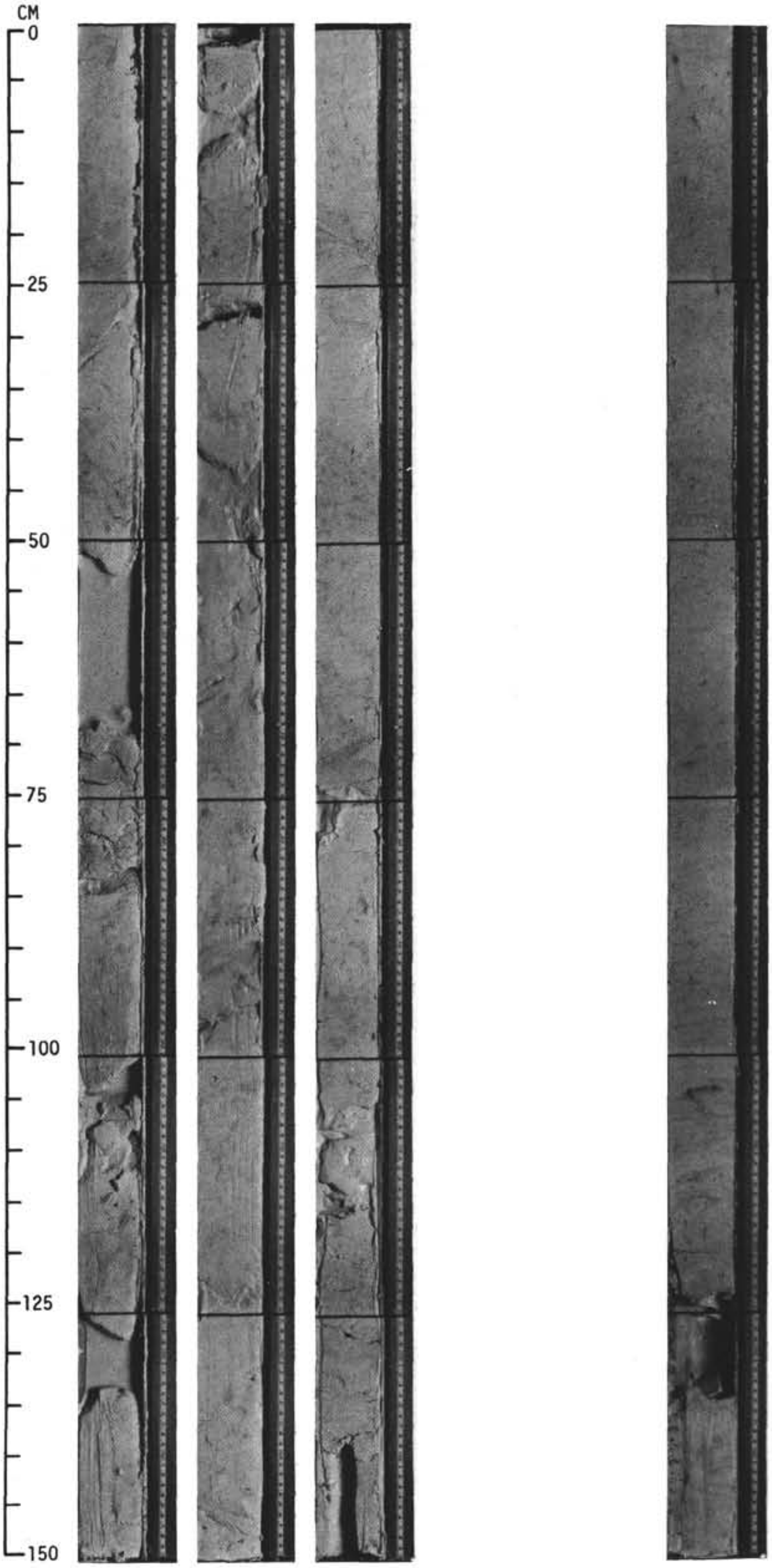

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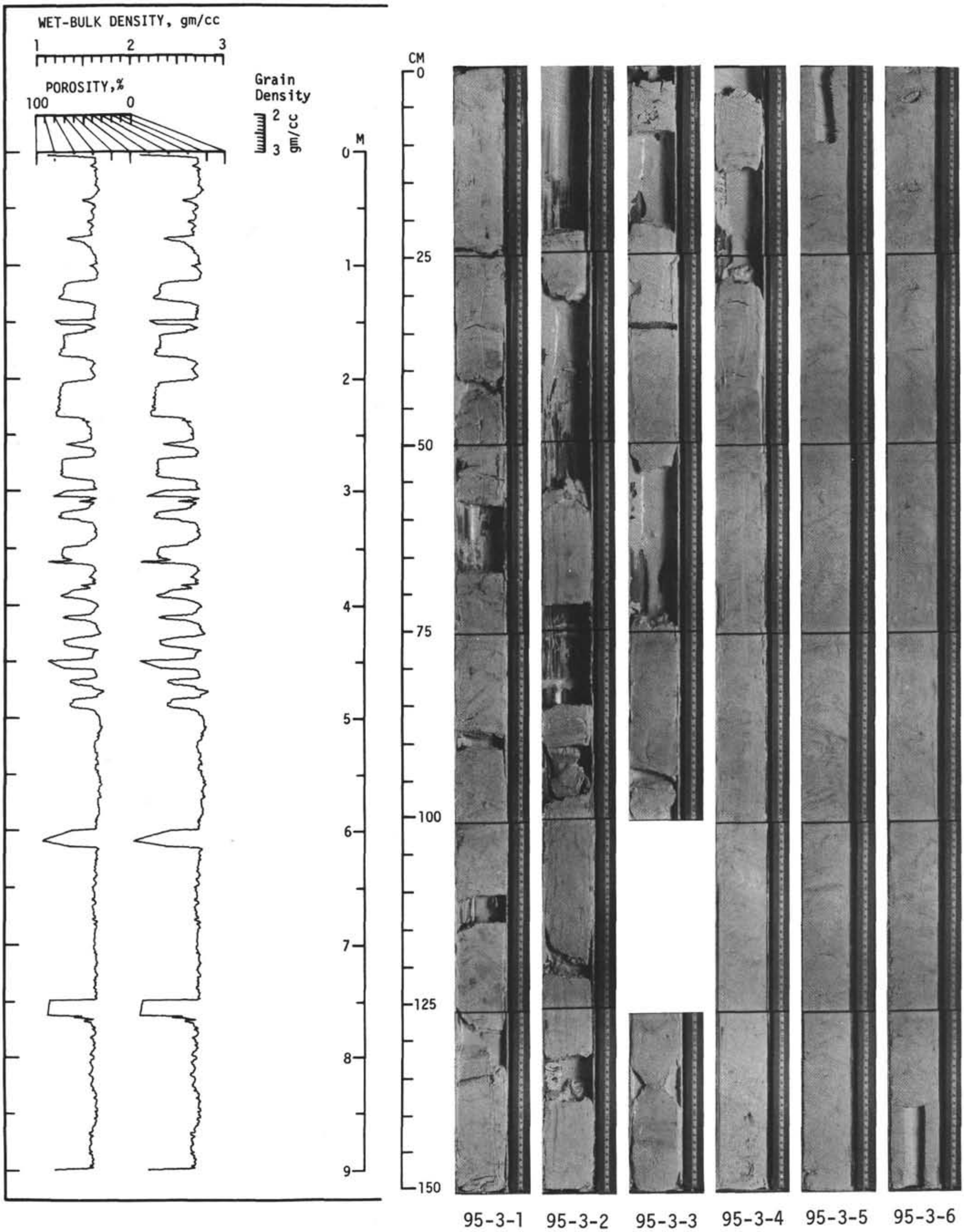
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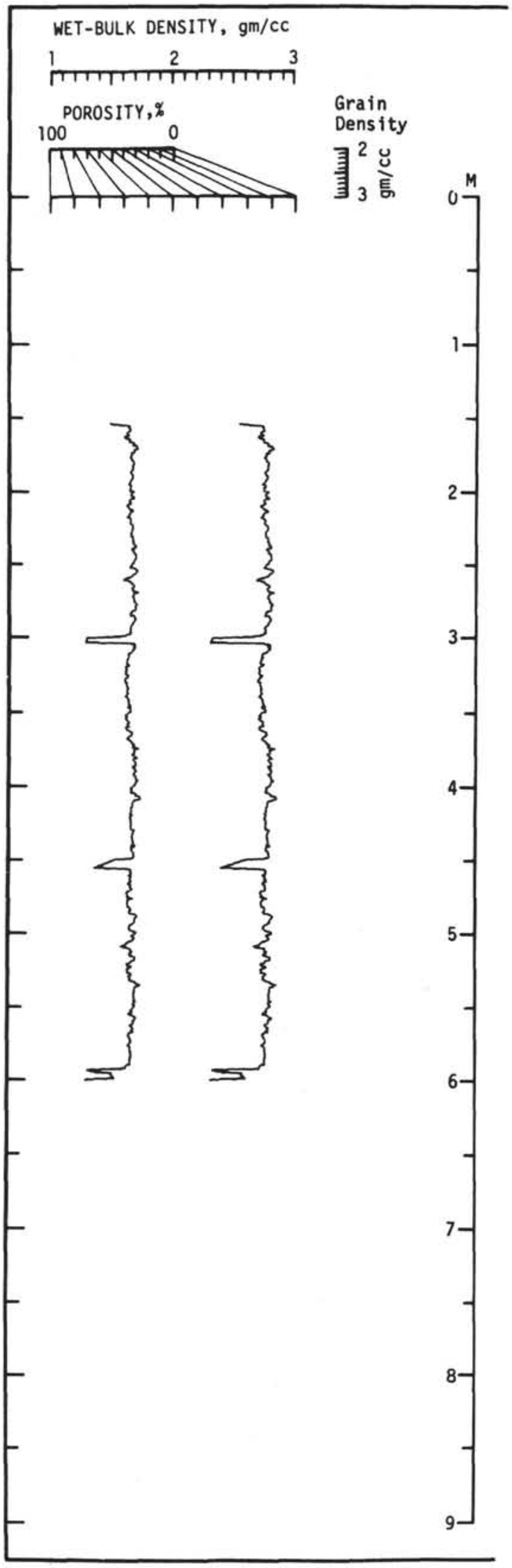
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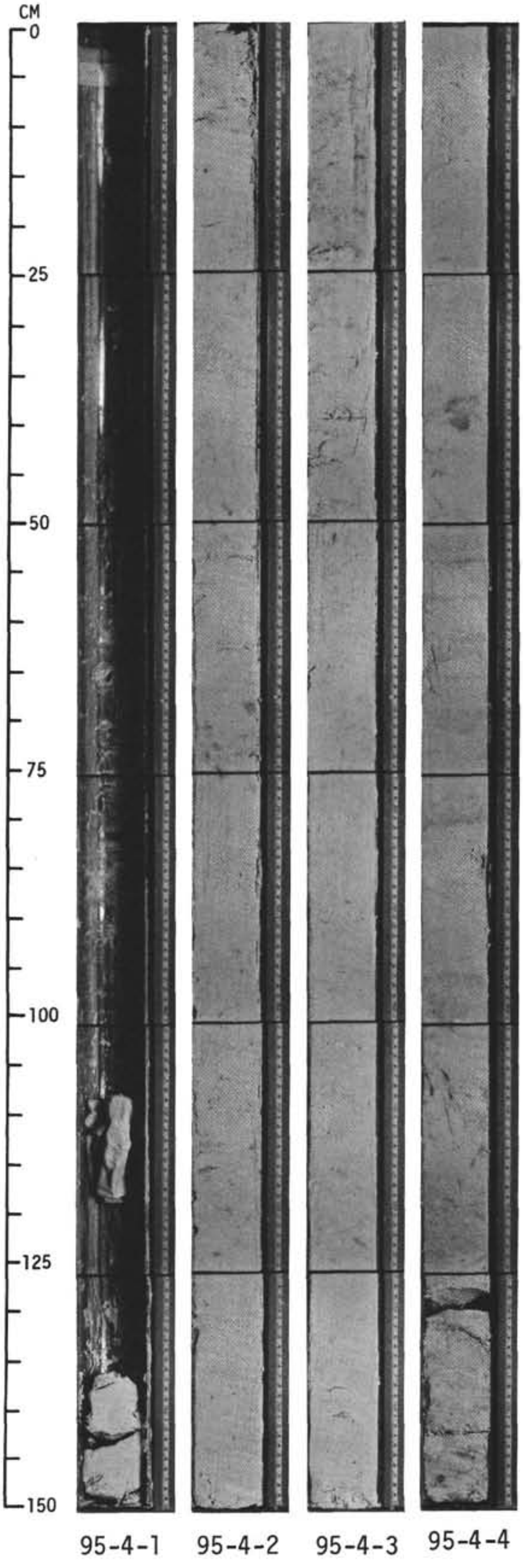
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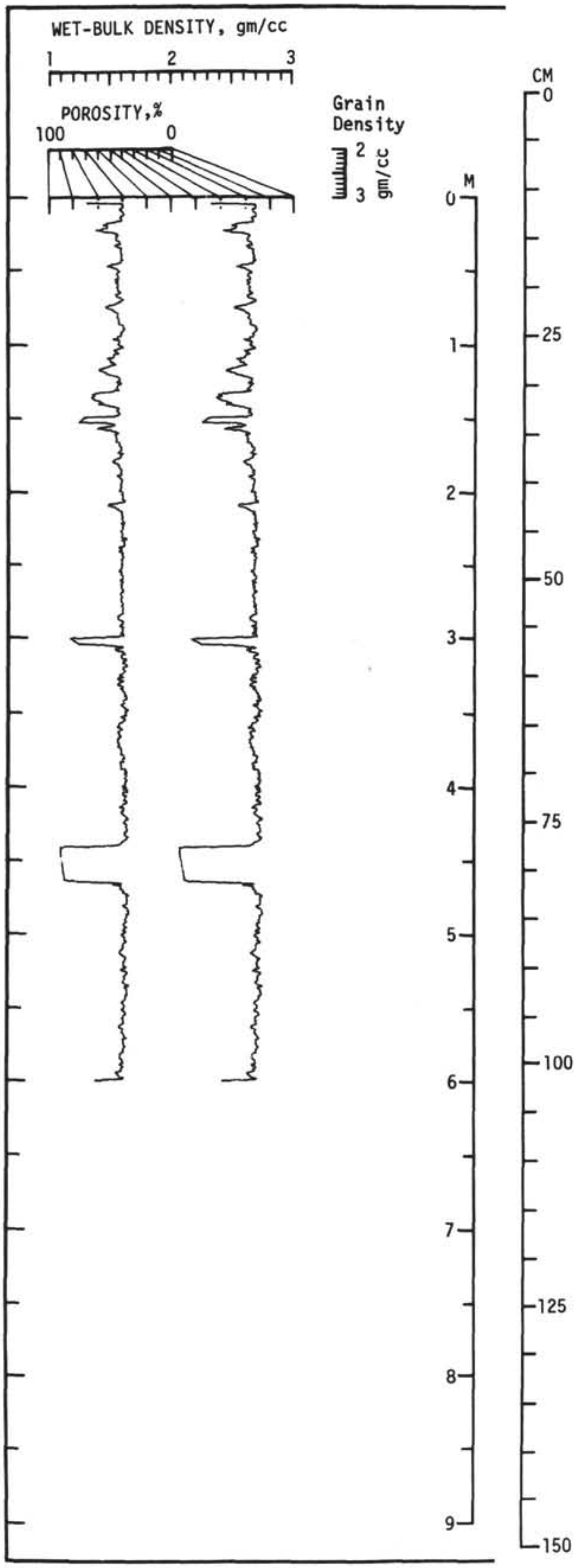

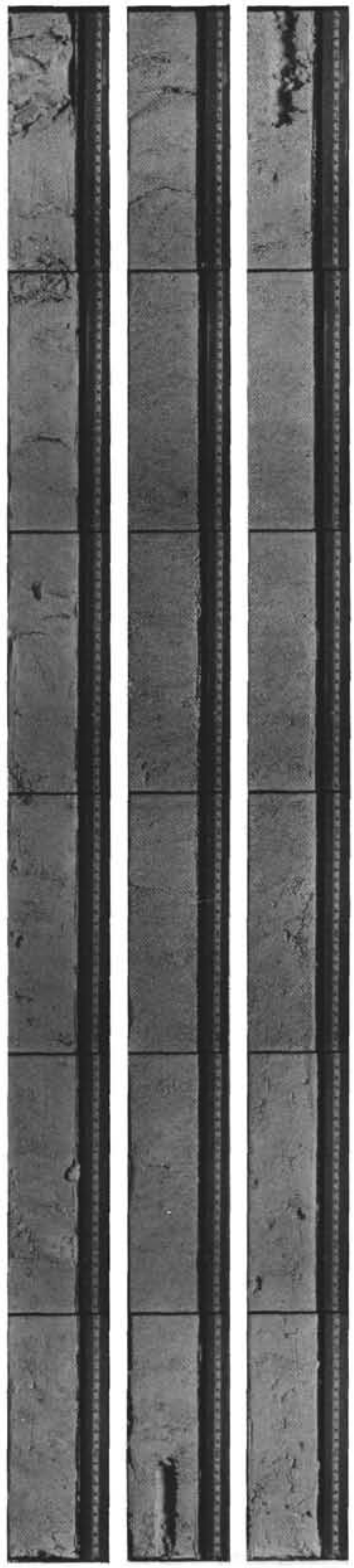

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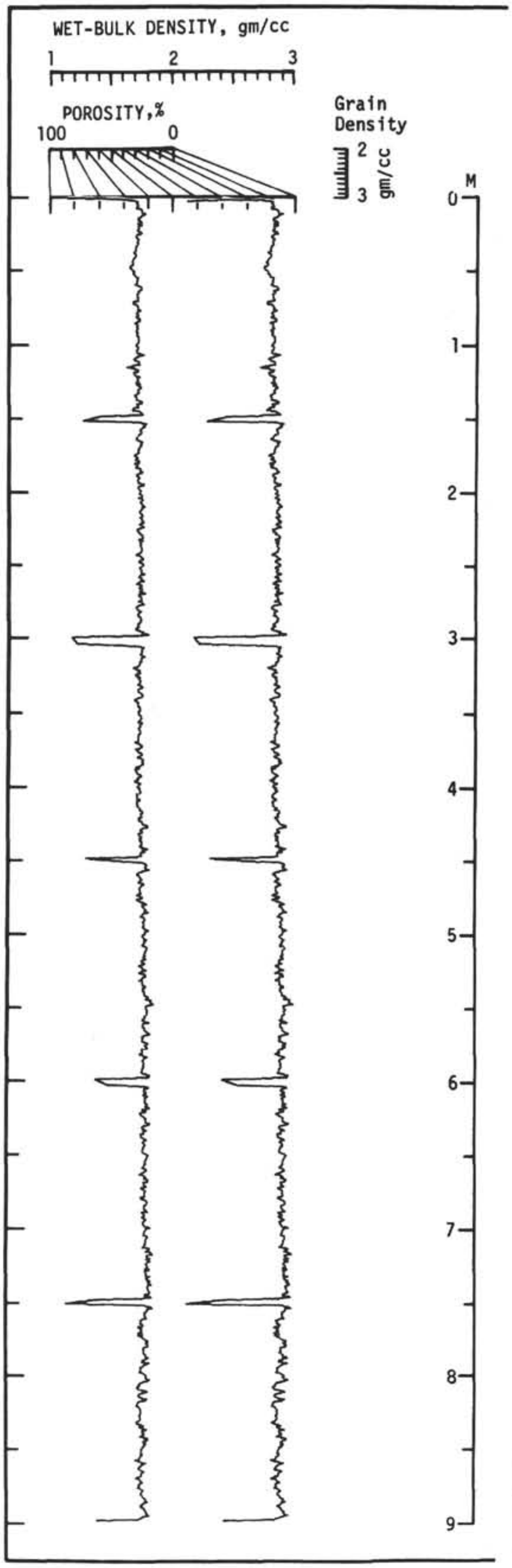

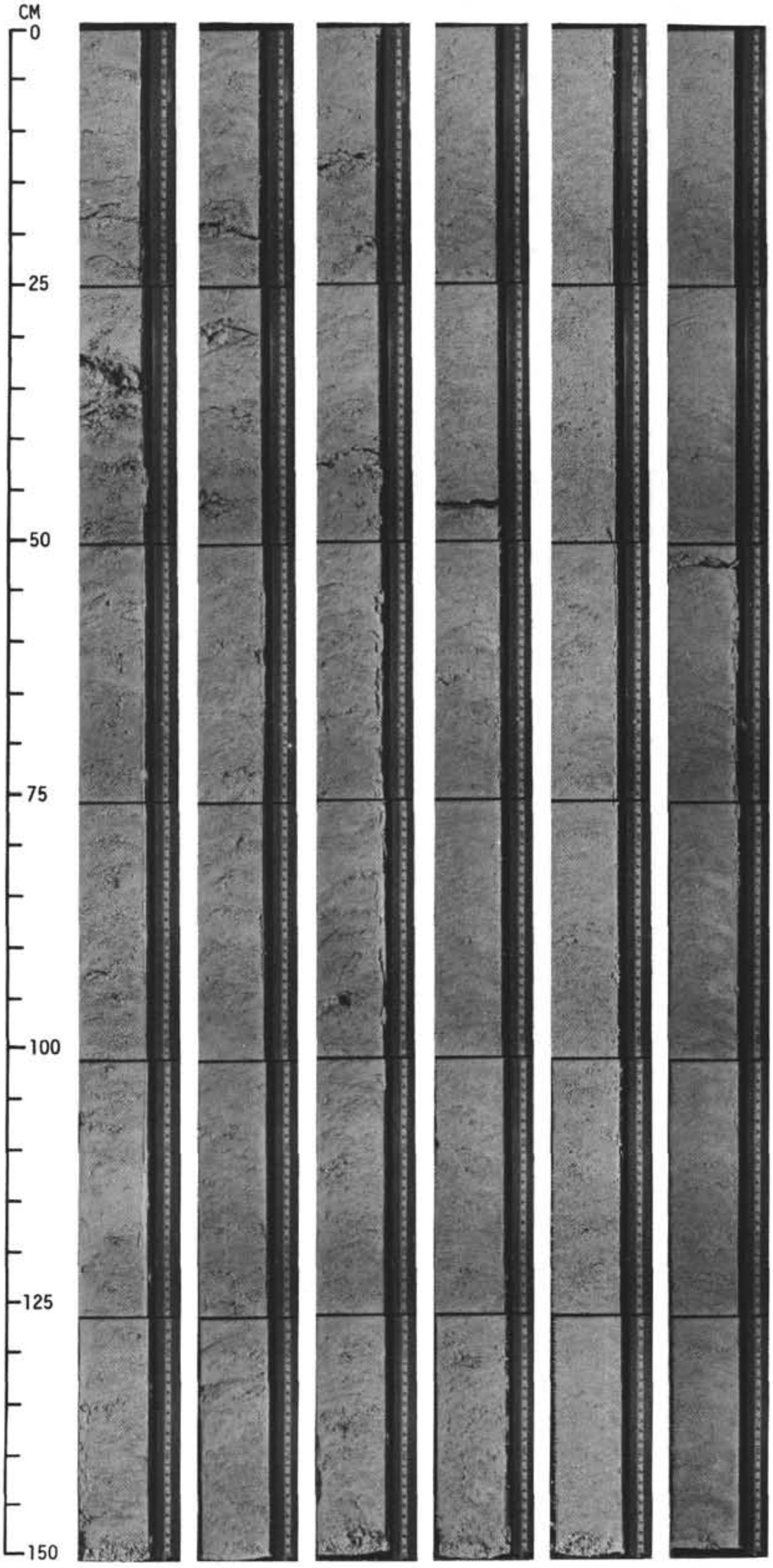

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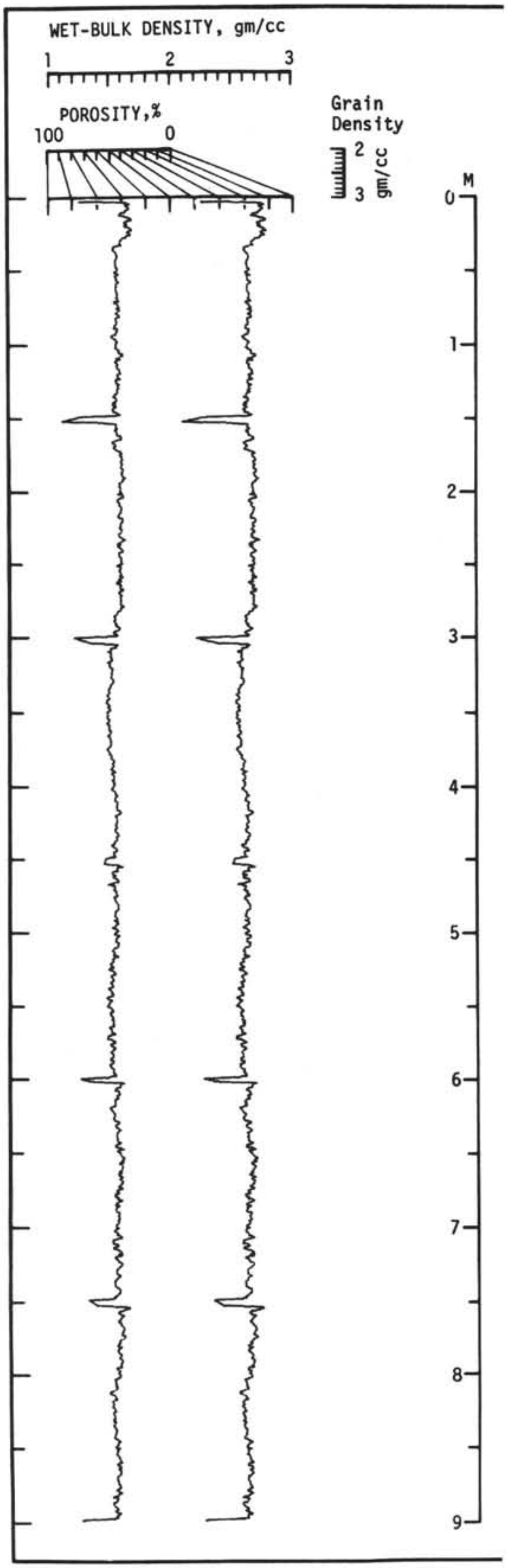

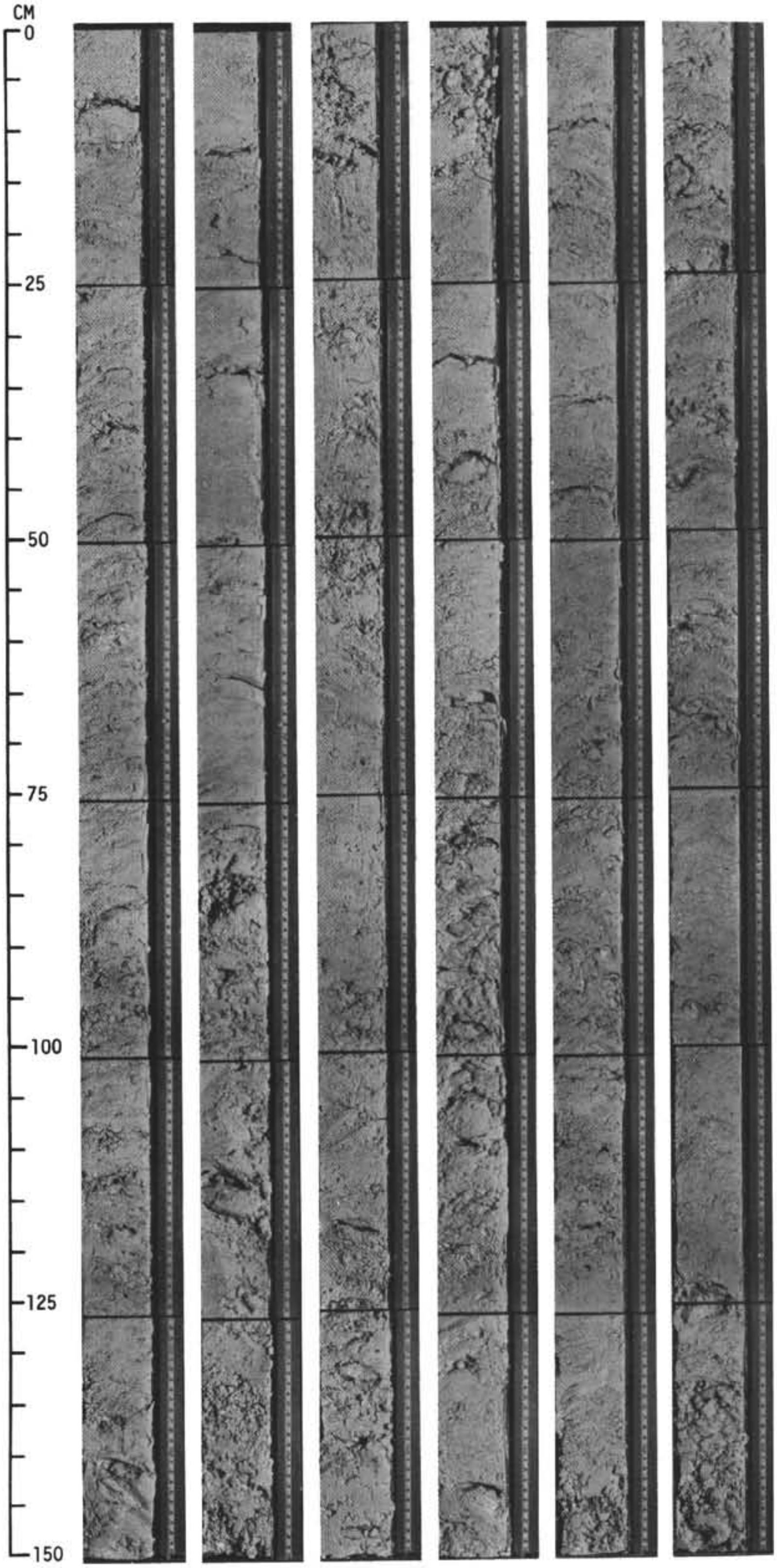

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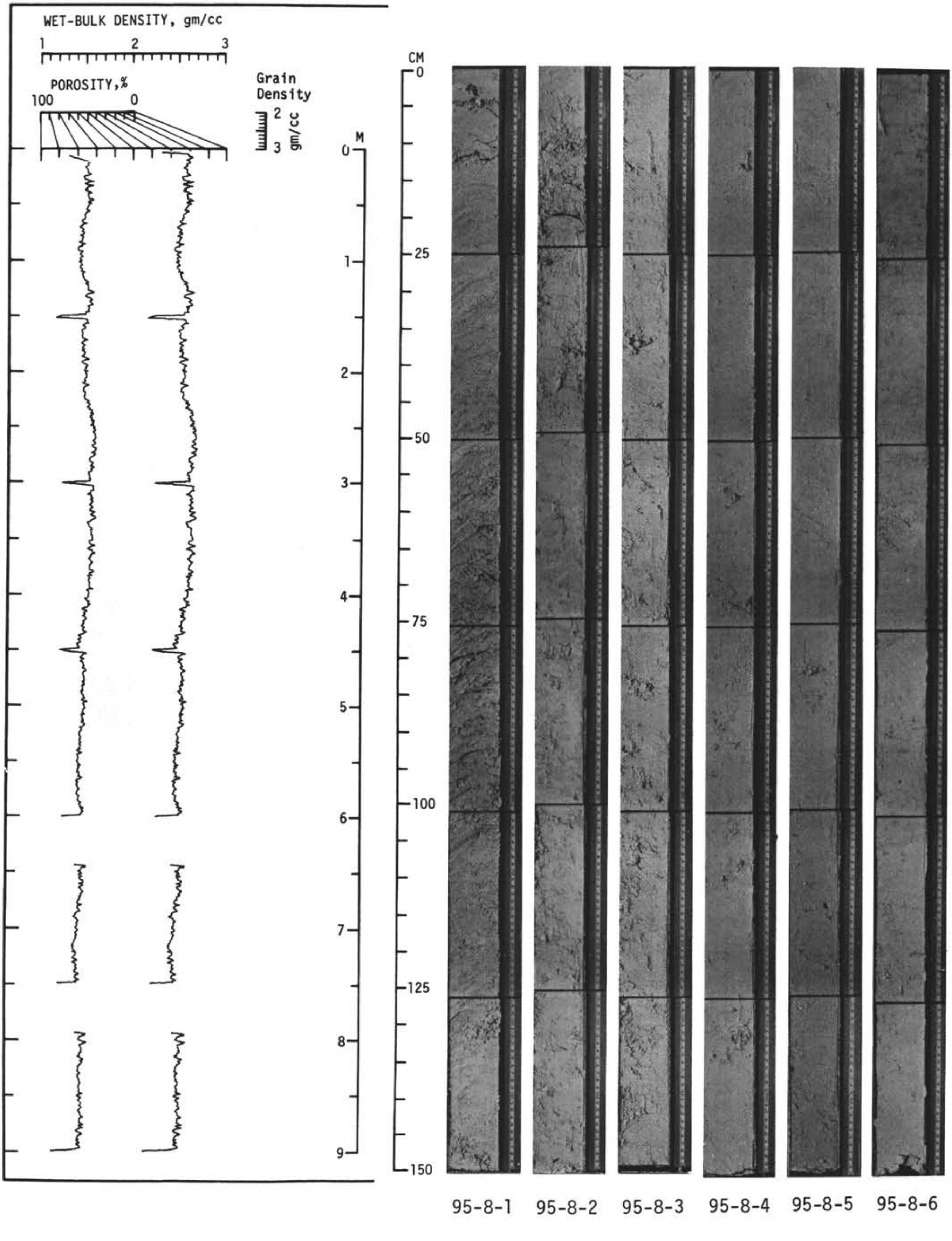
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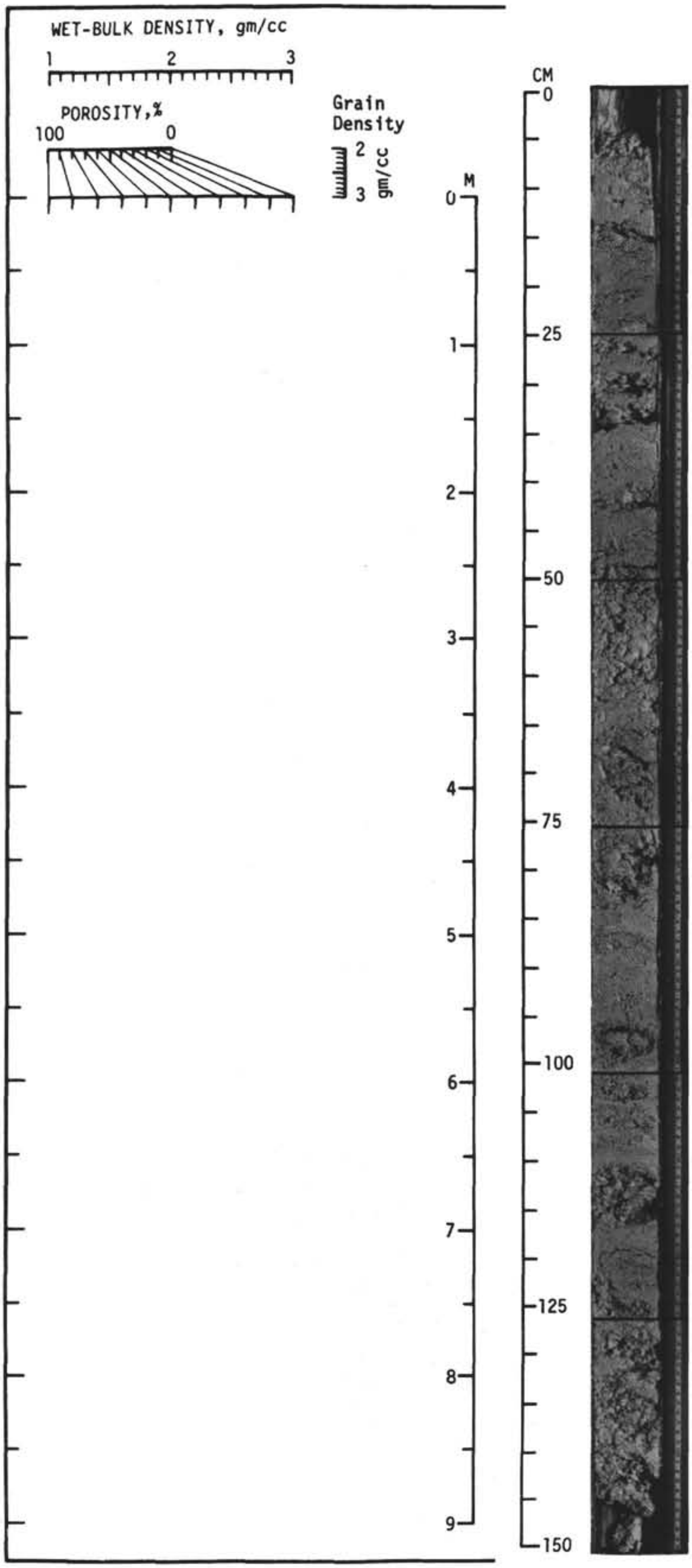
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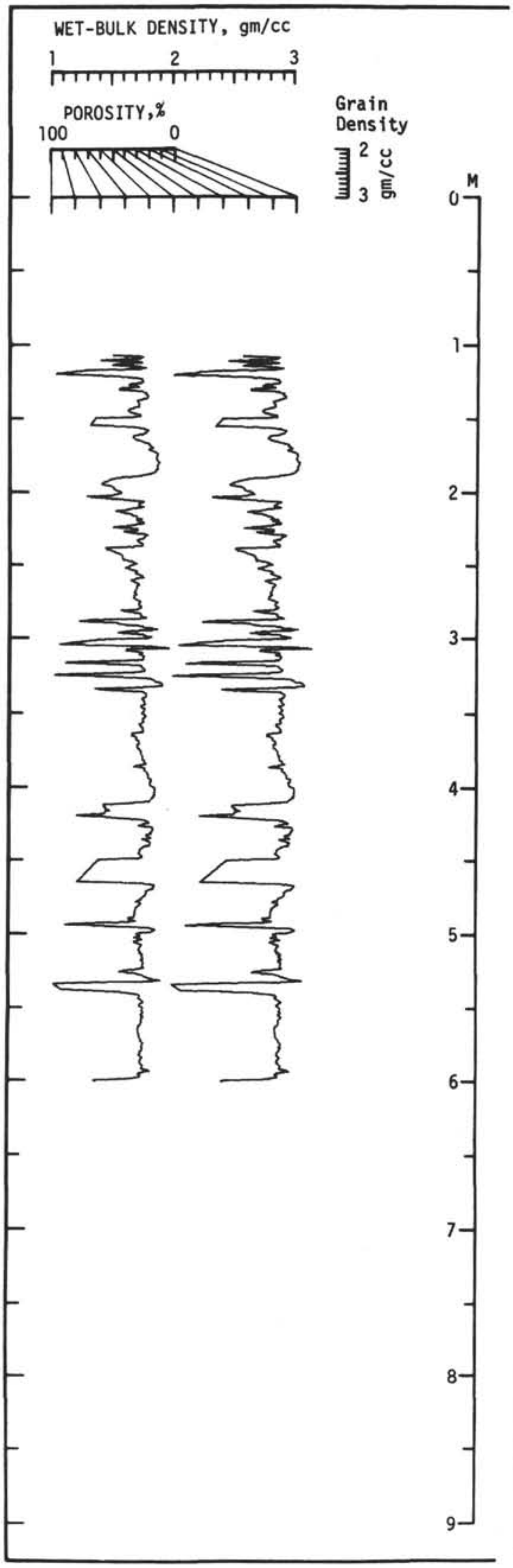

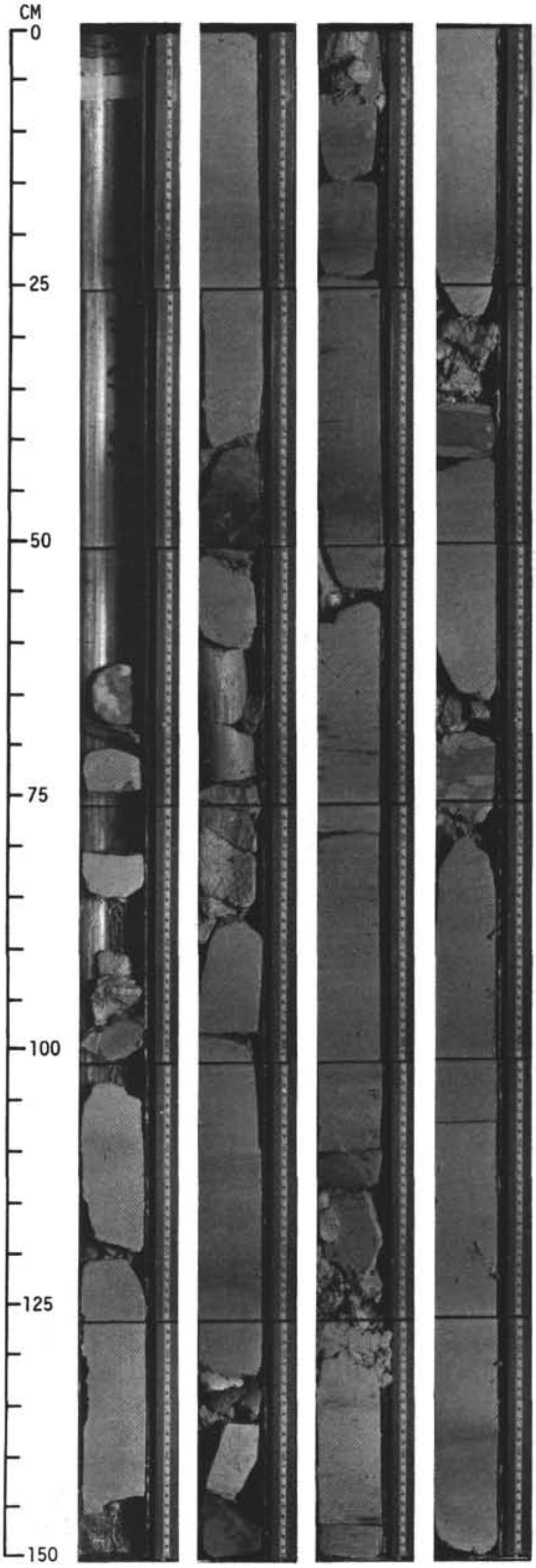

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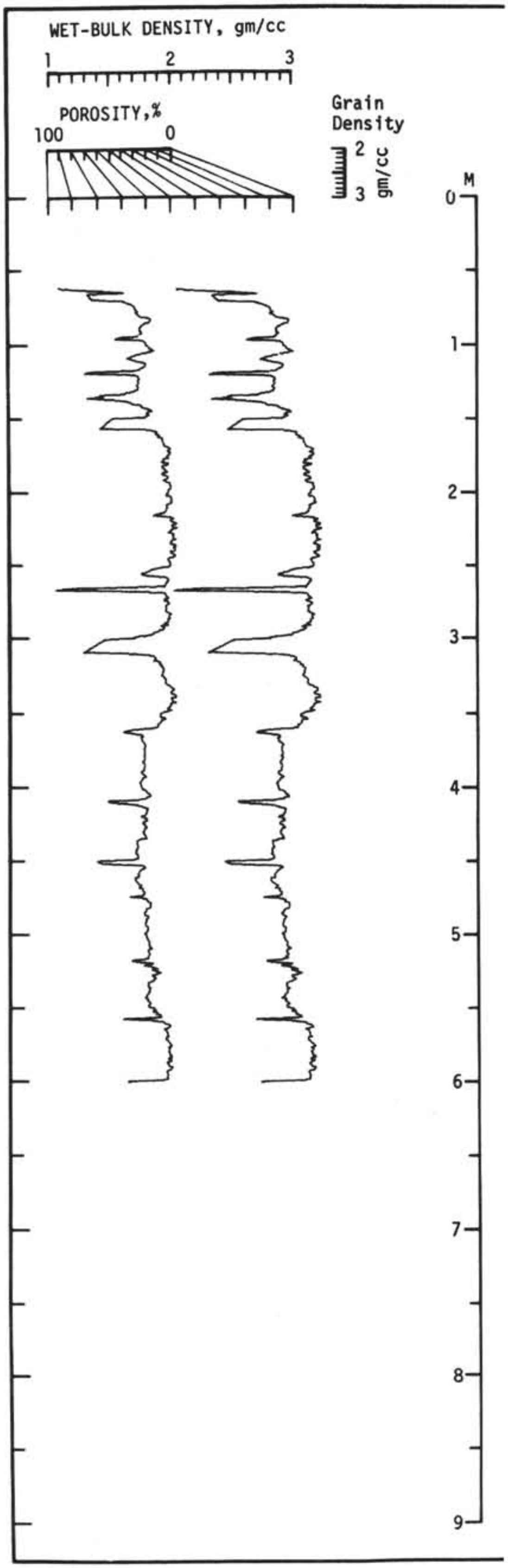

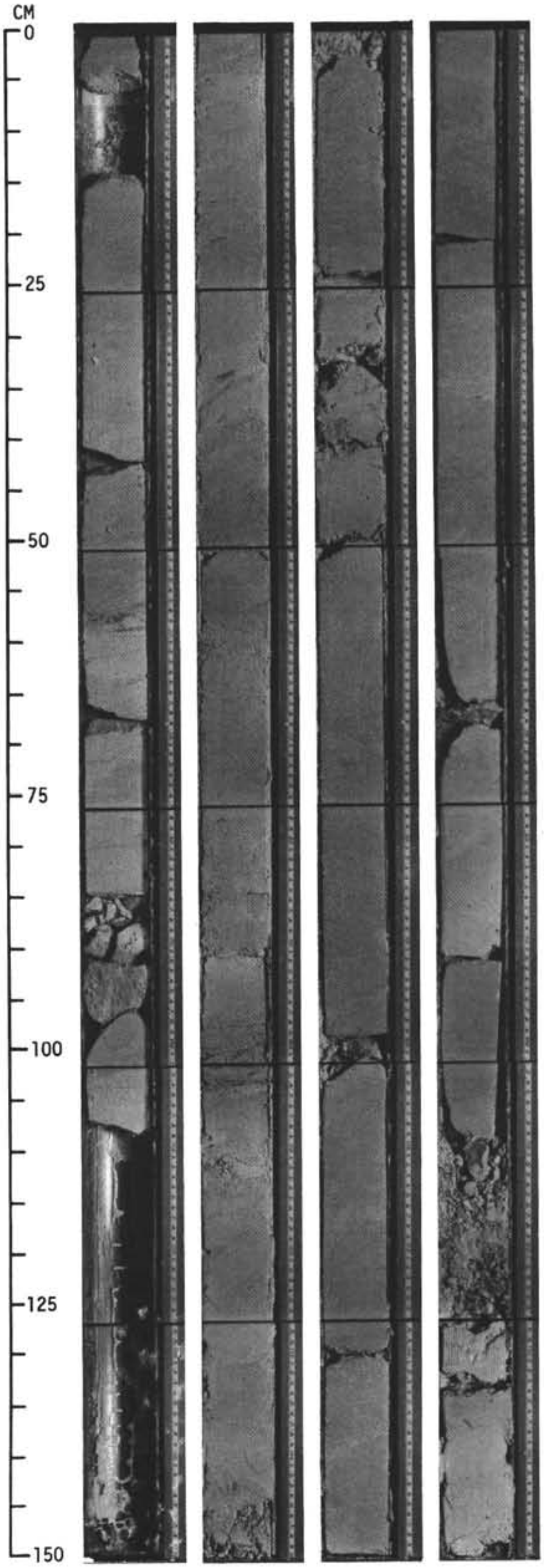

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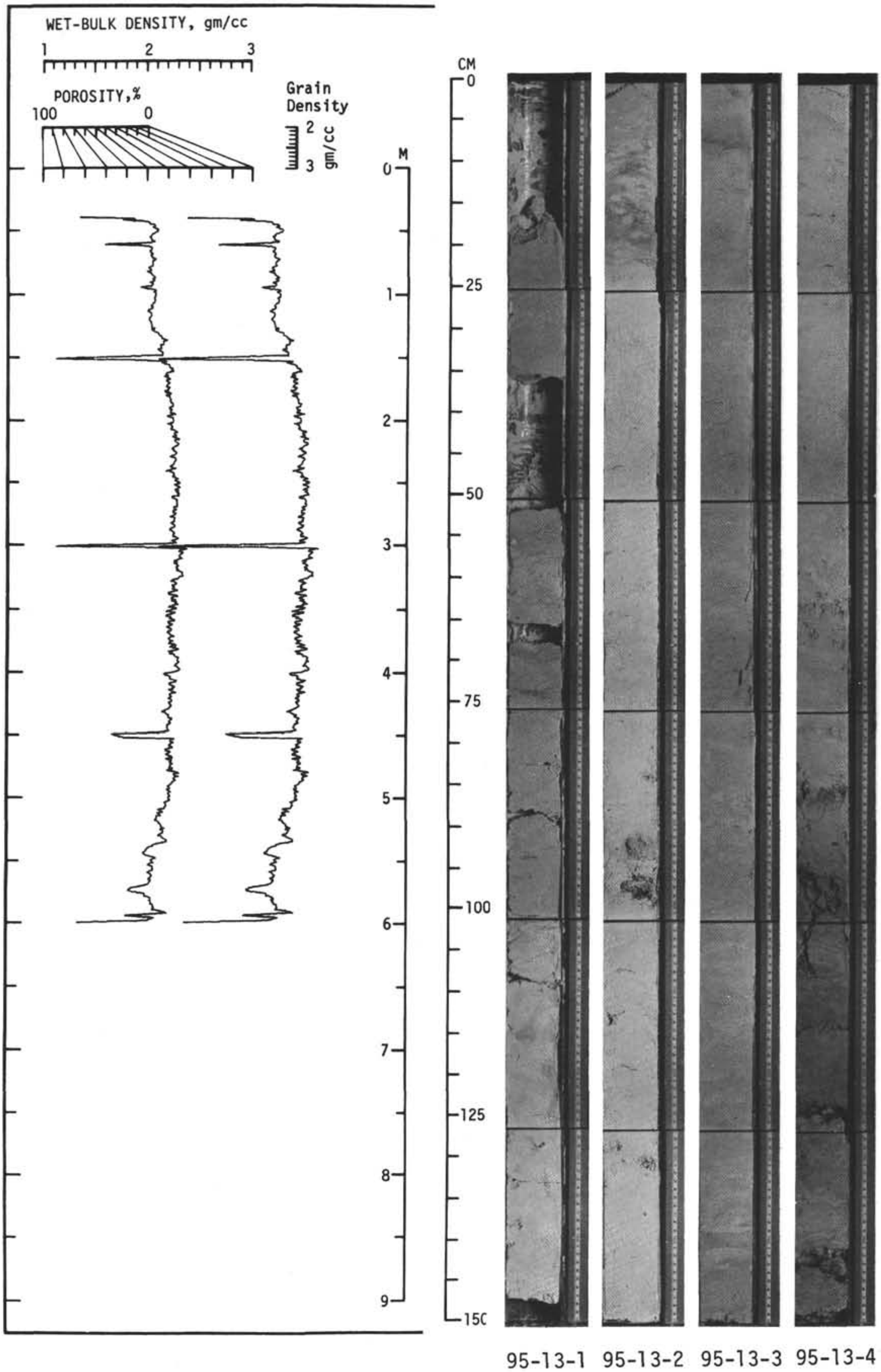
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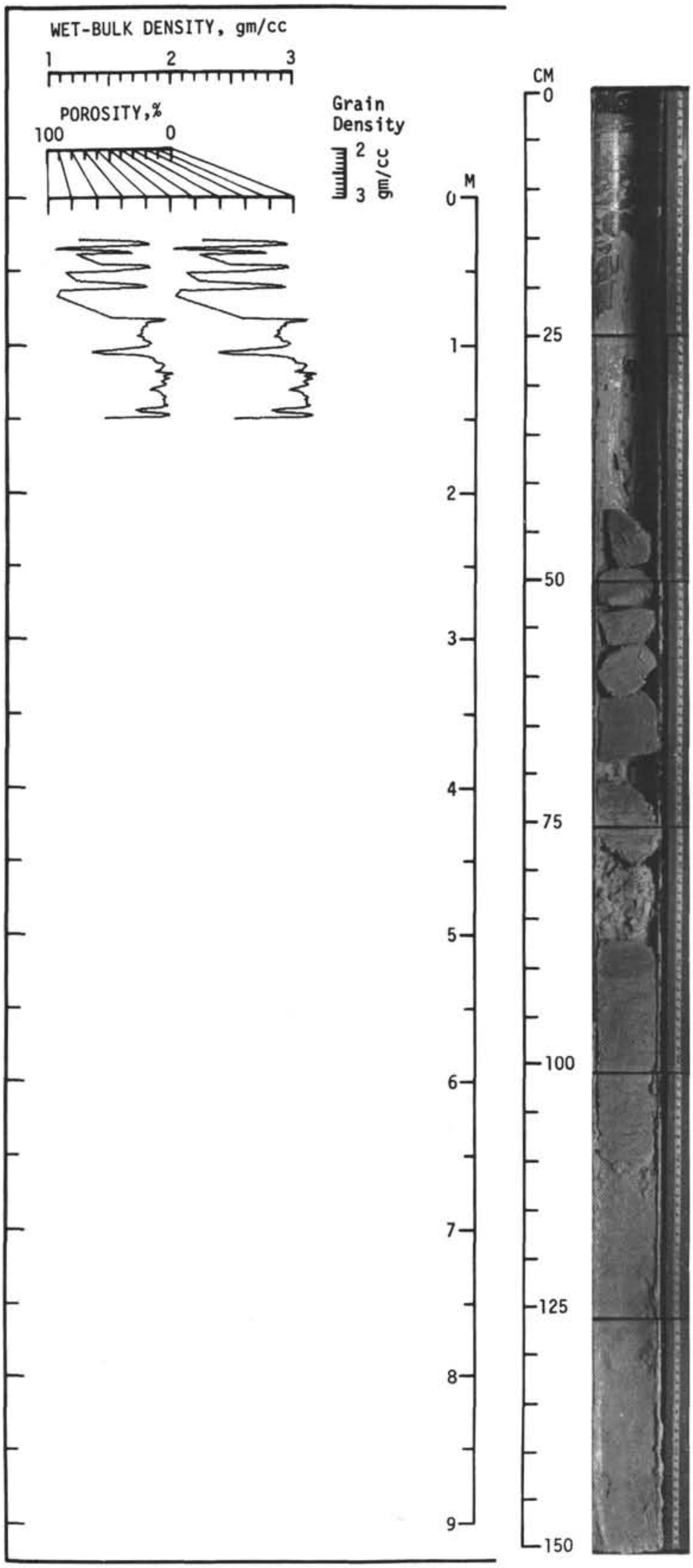
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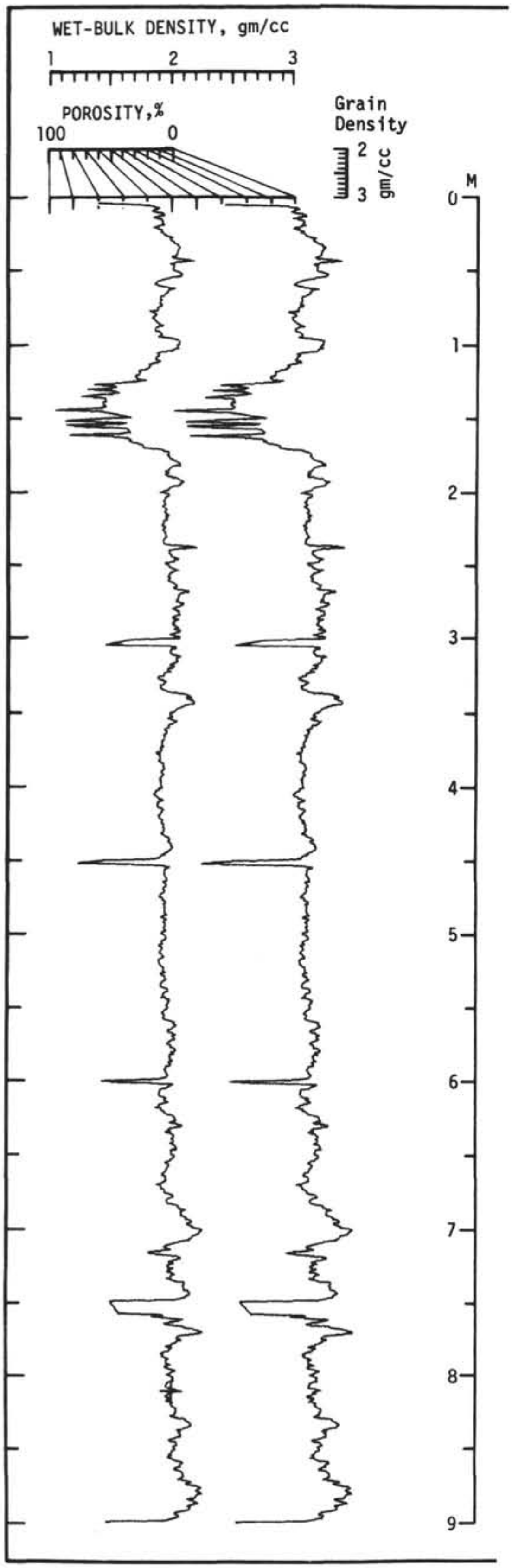

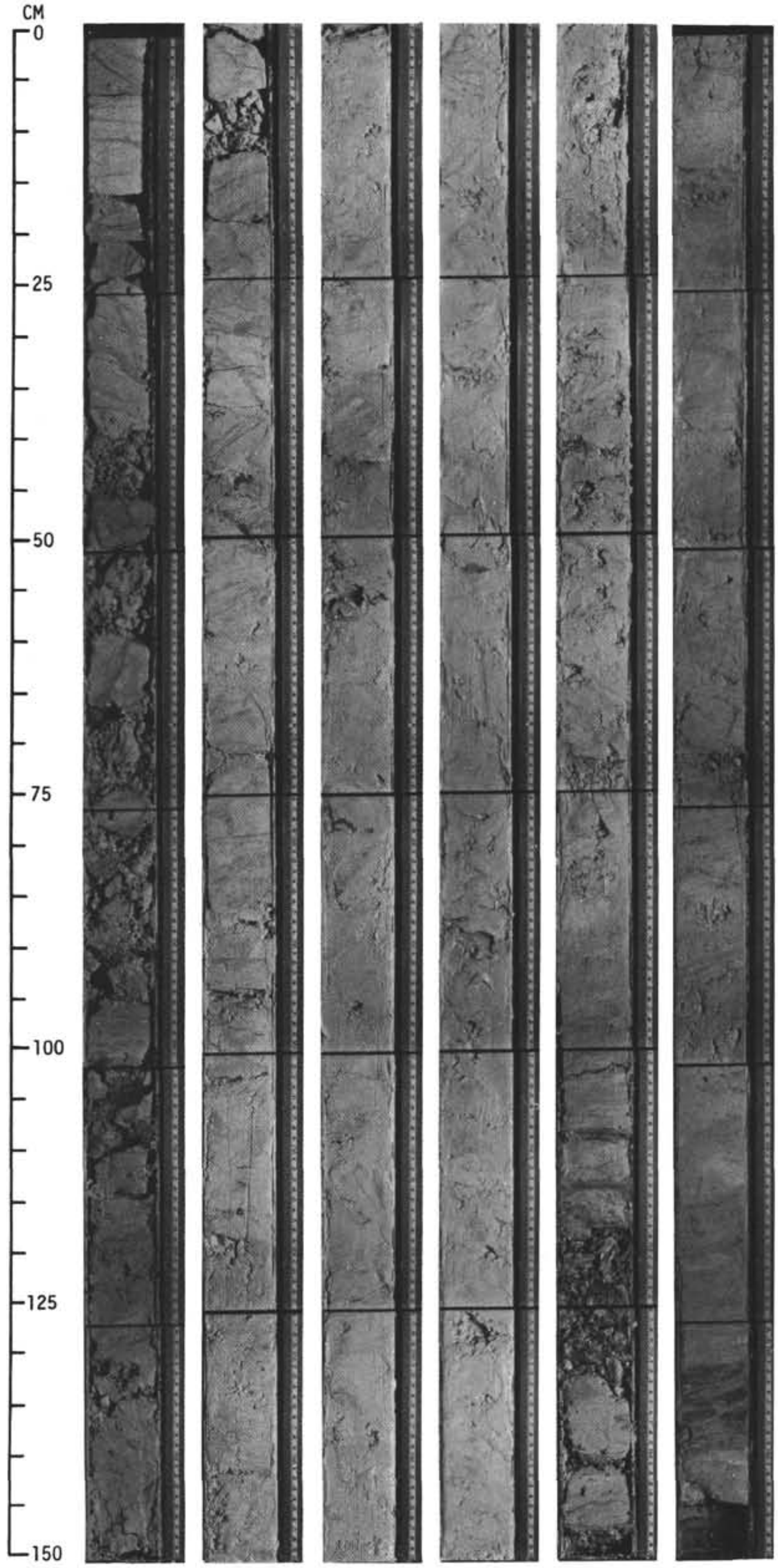

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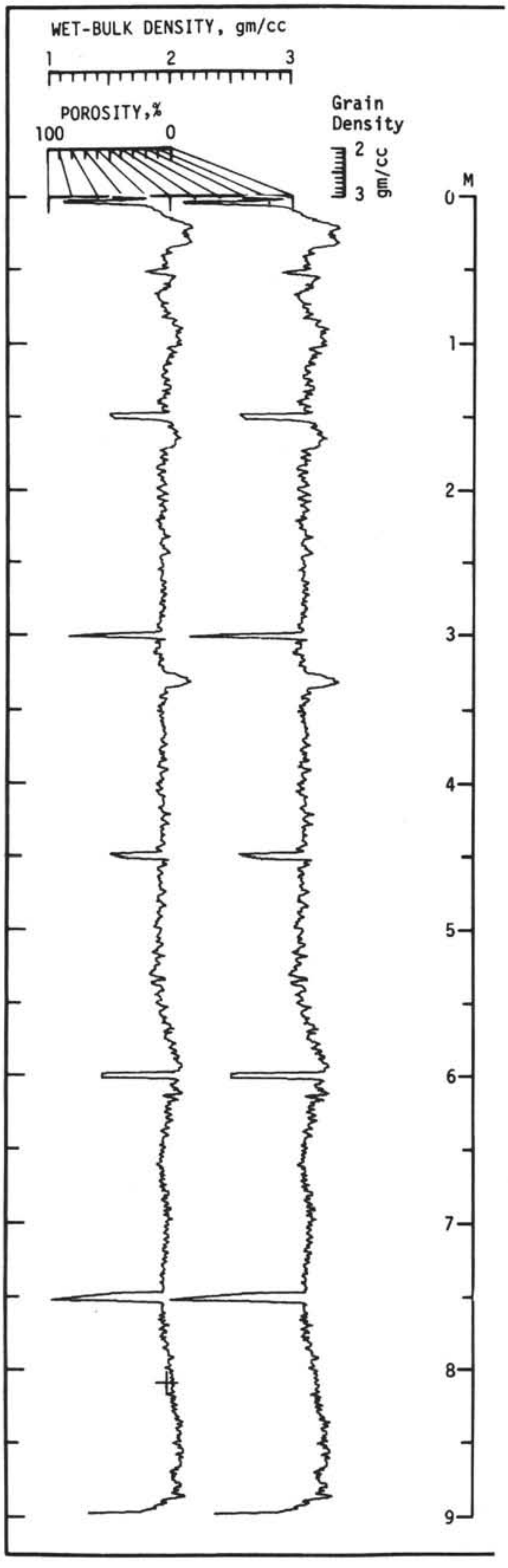

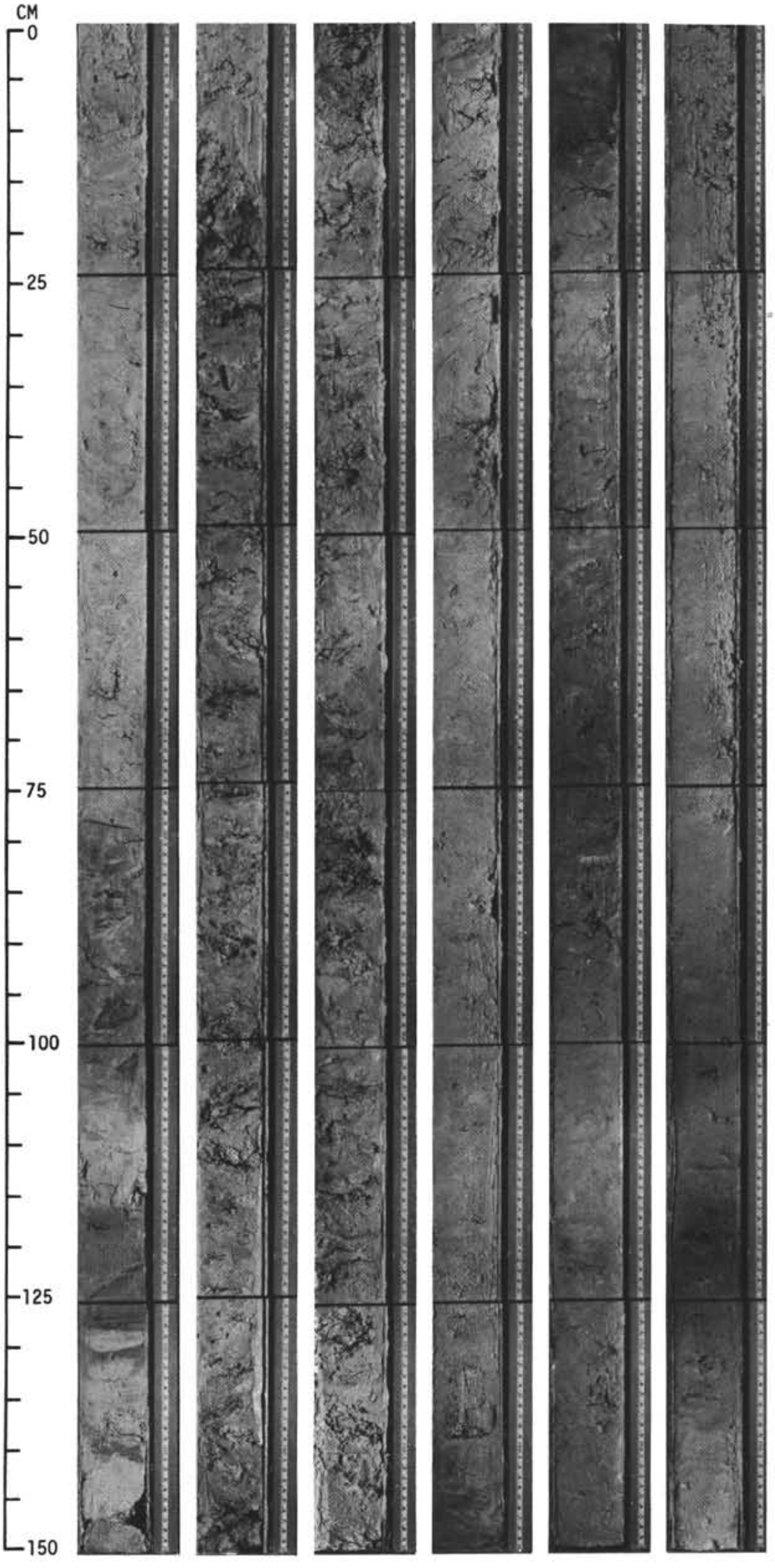

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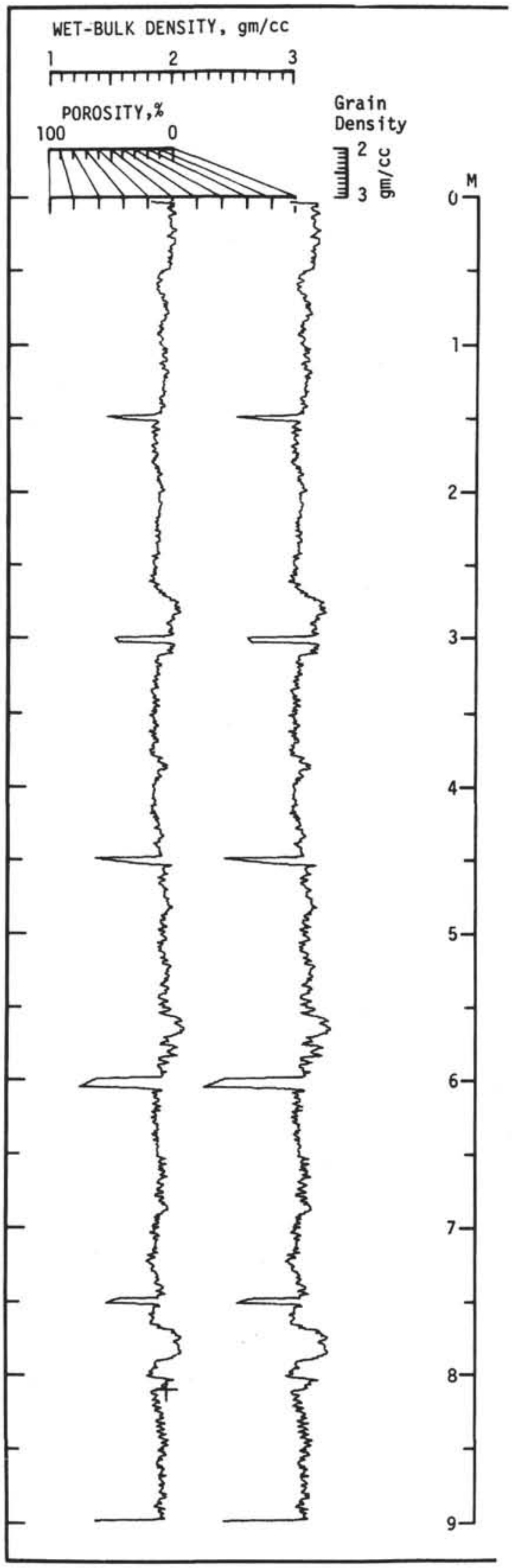
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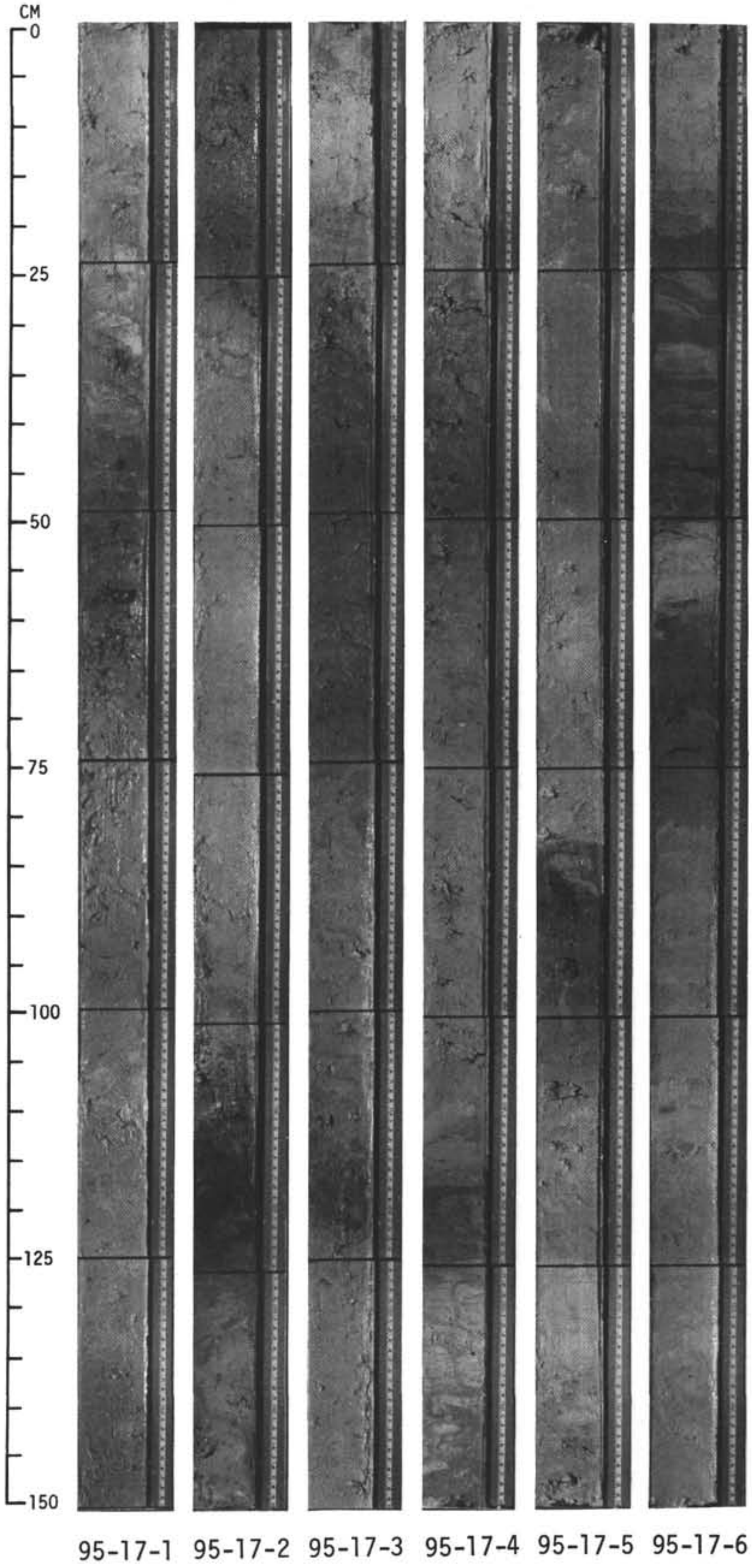
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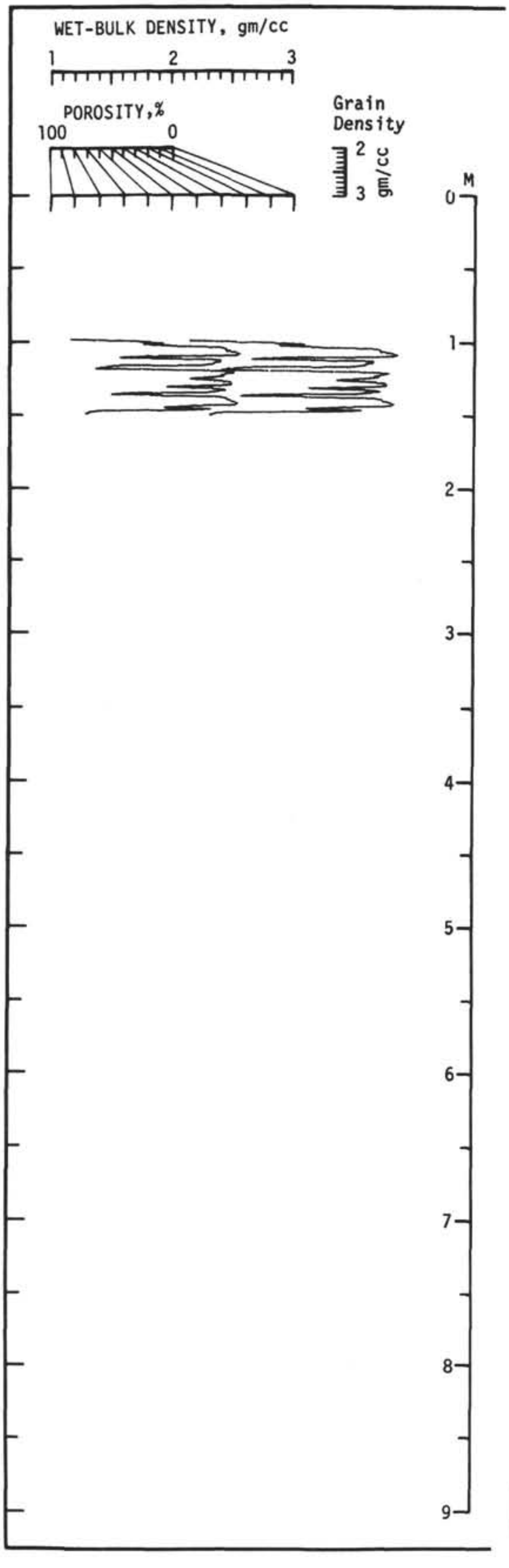
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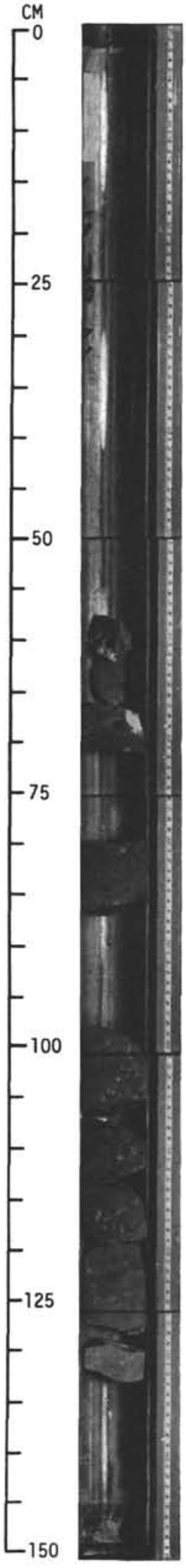
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